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SELECTED PAPERS.

Dissection of a Limb on which the operation for Popliteal Aneurism had been performed. By ASTLEY COOPER, Esq. F.R.S. Surgeon to Guy's Hospital.

[From the Medico-Chirurgical Transactions, Vol. II.]

HAVING lately had an opportunity of dissecting the limb of a man who had a popliteal aneurism for which the operation of tying the femoral artery was performed seven years ago, and having injected and dissected the limb, I thought that a short account of the appearances, might not be deemed unworthy the Society's attention.

Independent of the gratification of curiosity in observing the mode by which the tributary streams supply the want of the chief channel of the blood, a knowledge of the exact course of the enlarged arteries will be useful in the after treatment of patients who have undergone the operation for aneurism, as it will teach the position least liable to compress the anastomosing vessels.

When this limb is examined, it will be seen that the arteries which form the new circulation are not only enlarged, but that they have also become *tortuous*. This change in figure is at

first the effect of an increased momentum of the blood in the anastomosing vessels which elongates them, and therefore prevents their lying in the same space as before, a circumstance that may be at all times seen on injecting arteries, that if the injection is much forced, the vessel becomes serpentine. But in the living artery this tortuous course is established by a new growth; for at the time that the vessel elongates and increases in diameter, its coats also become considerably thicker than natural: and thus it is kindly provided, that as the vessel enlarges, and the original matter of which it was formed is expanded over a larger surface, instead of the vessel becoming thinner, the increased determination of blood upon the artery occasions the deposit of additional matter in its coats, and its strength, as well as its length and diameter, are increased.

In enlarged veins, as well as arteries, this tortuous course may be observed. This limb will shew it with respect to the arteries, and with regard to veins, it will be well seen in a plate published by Dr. Baillie, in the work for the improvement of medical and surgical knowledge, in which a view is given of the vena azygos enlarged and tortuous from an obliteration of the vena cava inferior, and it may be at all times seen in varicose veins of the lower extremities.

This tortuous course of vessels will be also observed in the arteries of old persons, in whom the coats of the vessels are ossified; for in these cases, as the circulation is less assisted by the arteries of the part, the heart is called upon to make extraordinary efforts, by which the blood is sent with such momentum upon the aorta, as to increase its length and diameter, and render its course serpentine. It is in the aorta, before it forms its curvature in the abdominal aorta, and in the iliac arteries that this change is most conspicuous.

Any great increase in diameter of the anastomosing vessels is but slowly produced, for I have injected a limb several weeks after the operation for popliteal aneurism, without being able to force the injection through communicating vessels into the parts below. To enlarge the vessels much, it is necessary that the limb should have been employed in active exertion.

On account of the arteries not very readily enlarging, the limbs of those who have undergone the operation for aneurism

are for a considerable time weaker than natural. They feel the influence of cold more, are more disposed to ulcerate from slight causes, and when sores are produced, have diminished powers of restoration. On account of the languor of circulation and the diminished power of resisting the influence of low degrees of heat, it is right, after the operation for aneurism, to clothe that limb much warmer than the other; for which purpose, a piece of flannel or a fleecy stocking should be applied to prevent the sedative influence of cold.

A man who had undergone the operation for popliteal aneurism, complained in the evening of his leg being painful, and a dresser going through the ward, applied a lotion of the acetate of lead, and when the rags were removed on the following morning, the limb was found mortified.

Mr. Campbell, a patient of Mr. Curtis, surgeon in Whitechapel, underwent the operation for popliteal aneurism at a time when the weather was extremely cold. In three nights after the operation, he said his foot was benumbed, and when it was examined, it was found to be of a blue colour and quite cold. Frictions were immediately had recourse to; first with the hand only, and, after a time, with warm flannels, and the circulation was restored, although with considerable difficulty.

When a ligature has been applied, it is some time before the artery below becomes obliterated. Mr. Forster, surgeon of Guy's Hospital, has a drawing in his possession of a case of popliteal aneurism, for which the femoral artery was tied in August; the man died in January following, and when the limb was injected, the femoral artery, below where the ligature had been applied, was found to have received a part of the injection by communicating vessels.

It is for this reason that the pulsation in some aneurisms, where there are free communicating vessels, will remain for a considerable time after the operation. However, in twelve or fourteen months, when the femoral artery has been tied, it becomes obliterated, above the ligature to the arteria profunda, and below it, to the origin of the anterior tibial artery; and sometimes the remnant of the vessel is not only converted into a cord, but is ossified.

It is scarcely necessary to observe how improper it is to ap-

ply bandages upon limbs in which the principal artery has been tied; but I mention it because I have seen a roller used to confine dressings; on the same account it is required that attention should be paid to the position of the limb, to prevent any pressure being made by pillows, which may obstruct the course of the blood in its new channels.

Dissection of the Limb.

The femoral artery, which is necessarily obliterated by the ligature, was here converted into a cord from the origin of the arteria profunda down to the ham. The whole of the popliteal artery was also changed into a similar substance; and thus the natural channel of the blood from the groin to the lower part of the knee was entirely destroyed. The muscles, therefore, which usually receive blood vessels from the femoral artery, as the sartorius, the rectus, and the vasti, had no branches but from the arteria profunda and circumflex arteries; and the articular arteries from the popliteal, although they were still capable of receiving blood, derived it, not from the popliteal artery, but from the communicating vessels of the profunda.

The arteria profunda formed the new channel for the blood. Considerably enlarged in its diameter, although still not equal in size to the femoral artery at the groin, it took its usual course to the back of the thigh on the inner side of the thigh bone, and sent branches of a larger size than usual to the flexor muscles of the leg, and just midway on the back of the thigh it began to send off those arteries which became the support of the new circulation.

The first artery sent off passed down close to the back of the thigh bone, and entered the two superior articular branches of the popliteal artery, which vessels supply the upper part of the knee joint.

The second new large vessel arising from the profunda at the same part with the former, passed down by the inner side of the biceps muscle to an artery of the popliteal, which was distributed to the gastrocnemius muscle, whilst a third artery, dividing into several branches, passed down with the sciatic nerve behind the knee joint, and some of its branches united themselves with the inferior articular arteries of the popliteal,

with some recurrent branches of those arteries, with arteries passing to the gastrocnemii, and lastly, with the origin of the anterior and posterior tibial arteries: and these new large communicating branches were readily distinguished from others by their tortuous course.

It appears then, that it is those branches of the profunda which accompany the sciatic nerve, that are the principal supporters of the new circulation. They were five in number, besides the two deep seated arteries which do not accompany the nerve.

The external circumflex artery was considerably larger than usual for the supply of branches to the muscles on the fore part of the thigh, but it had no branches for the new circulation.

The obturator artery did not appear larger than usual, and although much pains were taken to trace any enlarged communicating branches between the ischiatic arteries and profunda, yet no vessels capable of receiving coarse injection could be found.

Anastomosis appears to be so free in all the arteries of the limbs and in the vessels of the head and neck, that there is no difficulty, with the precautions that I have mentioned, in the blood finding its course in new channels when the old are interrupted. If there is any exception to this statement, it is with regard to the subclavian artery. But experience is not yet sufficient to lead to a decisive judgment upon this point.

Mr. Ramsden has published an account of an operation on the subclavian artery, and the man does not appear to have died from want of anastomosis. Sir William Blizard has also lately tied this artery, and, as I understand, accomplished the operation with great ease; but the man was advanced in years, and much reduced in strength, and he died on the fourth day after it had been performed.

In other animals the blood may be diverted from its proper channels in all the external arteries of the body. The carotids, the femoral, and brachial arteries may be tied, and yet the life of the animal be preserved.

The preparations which I have now the honour of showing to the Society were made under the following circumstances.

I have been long in the habit of tying the carotid arteries in

the dog in my Surgical Lectures, for the purpose of shewing the falsehood of the prevailing idea that a ligature upon these arteries produces sleep or coma in the animal. In a healthy dog who had been the subject of this experiment, I made ligatures upon both the femoral arteries; and when these ligatures had separated, and the wounds had perfectly healed, I tied one brachial artery, and that wound having closed, the other brachial was cut down upon, and, as I supposed, divided and tied. The animal survived these different experiments, and lived above a year afterwards. Immediately after death it was injected, and the injection had passed so successfully in the neck, and in the thighs, as to make beautiful preparations of the anastomosing vessels. But the injection failed in one of the fore extremities, so as to leave a doubt whether the brachial artery had been divided, or the radial or ulnar under a high division of the brachial artery. This, however, is certain, that the animal lived for more than twelve months with the two carotids, the two femorals, and one brachial artery obliterated.

These experiments were made, not merely with a view to ascertain the extent of the anastomosing principle, but also for the purpose of learning if any change would be produced in the habits of the animal, in consequence of the blood circulating through new and numerous channels; for it has been observed by Mr. Carlisle that slow moving animals have such a circulation; but with regard to this dog, he remained equally lively and active as before.

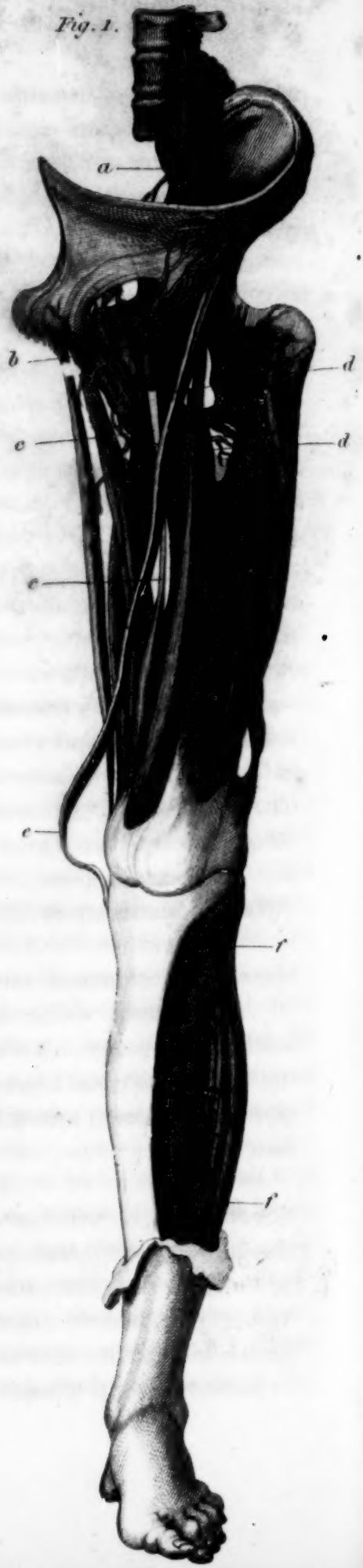
Lastly, I was anxious to ascertain, when even the aorta was tied, if the blood would still find its course by anastomosis.

It is now more than two years ago that I opened the abdomen, by an incision of about three inches in length close to its junction with the loins, and turning aside the peritoneum with my finger, I felt the aorta pulsating, and passing a blunt hook under it, easily put a ligature around it.

During the last winter, assisted by my friends Mr. White and Mr. Dean, two of our most promising and intelligent pupils, I repeated the experiments, and have the honour of shewing to the Society the aorta tied and divided, the animal having survived the experiment, and maintained his usual health; the ligatures coming away as other ligatures upon ar-

Fig. 2.

Fig. 1.



teries, and a successful injection having been made of the body, the anastomosing vessels are beautifully seen. These were sufficiently large and numerous to allow of a free injection of the femoral vessels.

Some degree of weakness is produced in the hinder extremities by a ligature made upon the aorta; but it is not sufficient to prevent the animal from using them with great freedom, and would scarcely be observed by one who knew nothing of the experiment.

Previously to the animal being killed, the femoral artery and vein were laid bare; the blood in the artery was florid as usual, and passed with a motion that was pulsatory, although weaker than natural.

Explanation of the Plate.

Fig. 1. Anterior view of the limb.

a. Iliac artery.

b. Femoral artery.

cc. Obliterated femoral artery.

d. Profunda and circumflex arteries.

e. Sartorius muscle.

ff. Anterior tibial artery.

Fig. 2. Posterior view.

g. Gluteal artery.

h. Ischiatic artery.

ii. Arteria profunda.

k. The enlarged communicating branches between the profunda and posterior tibial artery, (*for the popliteal artery was obliterated.*)

l. Lower tibial artery.

m. Interosseal artery.

Case of Hydrophobia, successfully treated. By JOHN SHOOLBRED, *M D of the Bengal Establishment; Surgeon to the Presidency, and to the Calcutta Native Hospital. First published in the Asiatic Mirror.*

To the Editor of the Asiatic Mirror.

SIR,

I HAVE the satisfaction to inclose a case of recovery from hydrophobia, effected by blood-letting alone.

A newspaper, I am aware, is not the most appropriate vehicle for the communication of medical science; yet, as I consider the speedy and extensive promulgation of this case to be of the utmost importance to the lives of individuals, and being acquainted with no means by which that can be accomplished, so readily as through the medium of your paper, I trust you will not refuse me the favour of giving it a place in the ensuing number of the Mirror.—I am, sir, your most obedient servant,

JOHN SHOOLBRED.

Calcutta, May 18, 1812.

Tuesday, May 5, 1812.—About 3 P. M. Ameir, a Muselman Bhestie (water-carrier), from twenty-five to thirty years of age, and middle stature, in the service of Mr. John Wood, schoolmaster at Chowringhee, was brought to the Native Hospital, labouring under the most unequivocal symptoms of hydrophobia.

The note from Mr. Wood, requesting admission for this patient, and the friends who accompanied him, stated that he had been bitten in the leg about three weeks before, by a dog believed to be mad, and that the symptoms of his disease had appeared that morning, the fifth.

I visited him in the hospital, the moment of his arrival, and found him sitting on the side of a cot, with an attendant holding him by each arm. The first view was sufficient to satisfy me of the nature of his complaint. His body, arms, and throat were affected with constant and uncontrolable spasmodic startings. The muscles of his face were thrown into quick convulsive action at each inspiration, drawing back the angles of the

mouth, and at the same instant depressing the lower jaw, so as to communicate the most hideous expression to the countenance. His eyes appeared starting from their sockets and suffused with blood; sometimes fixed in a wild and terrific stare, at others, rolling about, as if they followed some ideal object of terror, from which he apprehended immediate danger. A viscid saliva flowed from his mouth, which was always open, except when the lips were momentarily brought together for the purpose of forcibly expelling the offensive secretion that adhered to them, and which he effected with that peculiar kind of noise, which has been often compared to the barking of a dog. His temples and throat were bedewed with clammy moisture. His respiration was exceedingly hurried, and might more properly be called panting than breathing; or it still more nearly resembled that short and interrupted kind of sobbing, that takes place when a person gradually descends into the cold bath. He was exceedingly impatient of restraint; and whenever he could get a hand disengaged, he immediately struck the pit of his stomach with it—pointing out that part as the seat of some undescribable uneasiness. From the constant agitation of his whole frame, and the startings of his arms, it was impossible to count his pulse with exactness; it was, however, very unequal, both in strength and frequency; at times scarcely perceptible, and then rising again under the finger; sometimes moderately slow and regular for a few pulsations, and immediately after so quick as not to be counted; but conveying, upon the whole, an idea of a greatly oppressed and impeded circulation. His skin was not hot; and though his head was in incessant motion, accompanied with such savage expression and contortion of countenance, as might easily have alarmed those unaccustomed to such appearances, he made no attempt to bite, which is far from being a frequent symptom of the disease; and when it does occur, must be considered merely as an act of impatience at being held, and, no more than the peculiar noise above noticed, as indicating any thing of the canine nature imparted by the bite, an opinion which has been sometimes fancifully but absurdly entertained.

When questioned concerning his own feelings or the cause of his illness, he was incapable of making any reply; being

prevented, it is probable, either by the hurried state of his respiration, or by his mind being too deeply absorbed in the contemplation of horrible ideas, to admit of his attending to the queries addressed to him.

I desired water to be offered to him; at the mention of which he started with increased horror and agitation, and endeavoured to disengage himself from those that held him. When one of the attendants approached with a cup of water, he looked at it wishfully, and after some efforts, with apparent reluctance stretched out his hand to take hold of it; but before he could reach the cup, his hand was suddenly drawn back by a convulsive motion; at the same instant, he turned away his head, and writhed himself round on the bed in an agony of terror and despair, wholly inconceivable by any person who has not been a witness of the horrors of this most dreadful, and hitherto, it may be added, most irremediable of human maladies.

Such was the state of the patient at the moment of his admission, and for the few minutes that necessarily elapsed while these appearances were passing under my observation.

Of the nature of the complaint there could not exist a shadow of doubt; and having so recently read in the Madras papers a case of hydrophobia successfully treated by Mr. Tymon, of his majesty's 22d dragoons, by bleeding, mercury, and opium, I determined on the immediate adoption of the same plan.

I therefore, without delay, opened a vein in the right arm by a large orifice, out of which the blood sprang with uncommon impetuosity, and of so florid a colour as to resemble arterial rather than venous blood. By the time that 16 or 20 ounces of blood had flowed, the spasmodic startings of his arms, body, and neck, had considerably diminished; his breathing had become more calm, with less contortion of countenance, and he audibly acknowledged, that the pain about the præcordia and region of the stomach was upon the decline. Encouraged by these incipient appearances of amendment, I allowed the flow of blood to continue, and when about two pints were taken away, seeing him greatly composed, I desired water to be again offered to him—when, equally to my astonishment and delight, he took the cup in his left hand, the blood still flowing

from the right arm, and calmly, but with undescribable expression of satisfaction, drank two or three ounces of water—the sight of which, but a few minutes before, had thrown him into the most dreadful agonies. Soon after swallowing the water, he retched three or four times, but ejected nothing but saliva from his mouth and fauces; and finding now that his pulse was 104, weak, soft, and regular,—that he was become faint,—and that all appearance of uneasiness had ceased, so as to allow him to take a second draught of water, about four ounces,—I closed the vein, and laid him down on the bed. At this moment he expressed a desire to have a natural alvine evacuation, and wished to go out of the hospital for that purpose; but as that could not be complied with, he took no more notice of it at this time. It is worthy of remark also, that during the bleeding, he made a sign to have himself fanned, a thing I never knew a patient in hydrophobia to do before; their distress being so uniformly increased by any current of air blowing upon them, that, according to all my experience, the dread of air in motion is as constant an attendant on the disease as the dread of water itself.

After the bleeding he remained perfectly quiet, and fell into a slumber for about an hour: another circumstance which also strongly marks the abolition of the disease, as no hydrophobic patient was ever known to sleep. When he awoke, he expressed a wish to have some sherbet, which was immediately given to him, and he drank four ounces of it with perfect ease. He then fell into another slumber, during which some convulsive startings were again perceptible about his arms, chest, and face, but not strong enough to wake him. At a quarter past five he spontaneously awoke, and appeared again somewhat agitated, with more suspicion in his looks, and of apparent doubt whether he could swallow as well as before; for when he took the cup, he put it to his lips with a quick motion, and gulped down about four ounces of water in a hurried manner, as if afraid that the difficulty of swallowing would be increased by a moment's delay. He also put his hand to the region of the stomach, and said that the pain in that part was returning. These threatening appearances of relapse determined me to hazard a further detraction of blood. I therefore immediately opened a vein in

the left arm, and allowed the blood to flow again till he completely fainted; but previous to this effect of the bleeding, the pain at the stomach had ceased; and while the blood was yet flowing he had again drank four ounces of water without fear or disgust. When he recovered from the fainting fit, he retched several times, but, as before, discharged nothing but saliva.

At the end of the first bleeding, his pulse was 104; immediately before the second, it was 96, with a slight degree of sharpness in the beat; and after recovering from the fainting occasioned by the second bleeding, it was 88, regular, soft, and feeble, and he now complained of nothing but extreme weakness, and giddiness of the head. And at this stage of the case, I apprehend, it will be allowed that the cure of the hydrophobia was complete—whether it would be permanent or not, remained yet to be seen.

When I began the treatment of this patient, it was my intention, as I have said, to follow in every circumstance the practice pursued in Mr. Tymon's successful case; and accordingly, a draught with 100 drops of tincture of opium, and an enema of 300, were in readiness to be administered immediately after the bleeding. But seeing the surprising effects of the bleeding alone, and feeling convinced that the disease was, for the present at least, completely annihilated by the copiousness of that evacuation, I determined to preserve the treatment as simple as possible, in order that, if the patient did finally recover, it might with certainty be known to what he owed his safety; and that thence the application of the same practice to future cases of hydrophobia might with the greater confidence be recommended: a resolution in which I was the more confirmed from having heard some medical friends, whose opinions are entitled to every degree of respect, ascribe Mr. Tymon's success to the mercury he had used, rather than to the bleeding.

I am now fully persuaded, however, that I might safely, as far as the hydrophobia was concerned, have omitted all remedies after the bleeding; but thinking that calomel and opium, in repeated doses, were more likely than any thing else to induce that state of the system which would be least favourable to

a relapse; and also that if the patient, notwithstanding his present promising appearance, did not finally recover, it would certainly be said that I had not given him a fair chance, by departing, in any particular, from the treatment which had proved so successful in the hands of Mr. Tymon, I was led to conform to it so far, as to order four grains of calomel and one grain of opium to be given every three hours.

The first pill was taken at a quarter before six; but it was immediately rejected, followed by some water. A second was given five minutes before six, and remained. He now slept till seven, then drank some more water, and had a natural evacuation of his bowels: another circumstance which confirmed me in the belief that the disease was completely and permanently subdued,—having never before seen or read in any history of the disease, of such an occurrence as a natural action of the alimentary canal, in a case of hydrophobia.

At nine he took another pill, and again at twelve, and continued to slumber and drink water as often as he pleased.

Wednesday, May 6th—(*2d day*) 6 A. M. Has passed the night well. Took a pill at three, and another now. Has drunk water frequently. Pulse 84. Skin cool. Tongue clean at the edges; some remain of betel, eaten before he was taken ill, covered the center part. Two more alvine evacuations during the night. Complains of headache, but is entirely free from uneasiness about the stomach.

On examining the blood drawn yesterday, the surface of the coagulum is found not to be in the least concave, neither does it exhibit the slightest appearance of what is called the buffy coat. The quantity first drawn, making allowance for the evaporation of the night, measures 40 ounces; and the last between seven and eight.

Nine A. M.—Took another pill, which was followed by another evacuation; and, in half an hour afterwards, he ate eight ounces of sago. Is quite composed, and can answer questions distinctly concerning the accident and subsequent occurrences, till the time he was taken ill.

He says that nineteen days ago (including this day) when returning about four in the afternoon, from his own house at

Russapulagh, to his master's at Chouringhee, he saw a Pariah dog seize a fisherman, and bite him. Several people were collected at the spot; he also approached, when the same dog ran at him, and, as he was retreating before him, bit him in the back part of the right leg, about six inches above the ancle, where he shews two scars at the distance of an inch and a half from each other, but without any appearance of inflammation or thickening of the integuments. The dog, after biting him, disappeared, and he does not know what became of him or of the fisherman. The wounds bled a good deal, but not being very deep, they soon healed, without any application. He took no remedy, except, on the day he was bitten, a small piece of scarlet cloth (*sooltanee banat*) wrapt up in a piece of ripe plantain, which was recommended to him as an infallible antidote against infection from the bite of a mad dog. He never saw any one in hydrophobia, and though he had heard that persons bitten by a mad dog were liable to such a disease, the apprehension of it never dwelt on his mind, or scarcely ever occurred to him after the day on which he was bitten. He continued in his usual health till the 4th instant, seventeen days after the bite, when he found himself dull, heavy, and listless, with loss of appetite, and frequent apprehension that dogs, cats, and jackalls, were about to seize upon him. He also felt a pricking sensation in the part bitten. When his mother-in-law brought him his breakfast, he was afraid to eat it. He continued his business, however, of taking water from the tank to the house, till about noon of that day, after which he could not bear to look on, or to touch the water, being constantly harassed, whenever he attempted to do so, with the horrible appearance of different animals ready to devour him. He now, for the first time, thought of the disease arising from the bite of a mad dog, was convinced that was the cause of his present distress, and fully believed he should die of it. He ate no supper, nor drank any water that night, in consequence of the horrible phantoms that incessantly haunted his imagination. In the morning all his horrors were increased; the spasms came on, accompanied by anxiety, oppression, and pain about the præcordia and stomach: and those about him say that he continued to get worse in every respect, until he arrived at the hospital in the state al-

ready described. He does not himself distinctly remember any thing that happened during the whole day. He has some faint recollection of having been at his own house; but how he got there—when he left it—or by what means he was brought to the hospital, he does not at all know. The first thing he can recal to his mind is drinking the sherbet—and he says he has had his senses perfectly since that time—and that all his fears then left him, and have not since returned. This, however, is not entirely correct, as he acknowledges that he does not recollect the second bleeding, which shows that the disease had then so far returned as again to disorder his mental faculties.

Half past 10 A. M.—Complains of severe head-ache, and his eyes are more suffused than they were in the morning. No return of other symptoms.

Head shaved, and six leeches applied to each temple.

Three P. M.—Took a pill at 12, and another just now. Leeches bled freely. Head-ache relieved. Took eight ounces more of sago about noon.

Six P. M.—The same. Has now taken 28 grs. of calomel and 7 of opium. To take from this time only 2 grs. of calomel, and half a grain of opium every three hours.

Nine P. M.—Has slept for two hours. Pulse 80. Took another of the pills last ordered, also some more sago. Copious bilious evacuation. Still complains of giddiness, but not head-ache.

Thursday, the 7th, (third day,) 6 A. M.—Took a pill at 12, but refused one at 3, saying his mouth was sore. Took one now. Has been rather restless in the night. Threw up some bile this morning.

Ten A. M.—Exceedingly distressed by excessive secretion of bile, which he is frequently throwing up and also passing downwards in great quantity, and of a dark-green colour. Pulse 110. Some heat of skin; expression of uneasiness in his countenance—burning sensation all over the abdomen; but quite different, he says, from the former pain about the stomach. He was ordered a pint of infusion of camomile, which brought off much bile; at 11, eight grains of calomel, and at half past 12, half a drachm each of jalap and magnesia. By the effects of these remedies, he was much relieved in the evening; though

the complaint continued to disturb him in the night, and it was necessary, on

Friday morning, the 8th, (fourth day) to promote the farther evacuation of bile by senna, manna, and cream of tartar, and to order an enema of conjee to allay local irritation. Pulse only 80, soft. Burning removed from the abdomen. Ate a water melon in the night. Copious flow of saliva from his mouth.

Saturday, 9th, (fifth day) 9 A. M.—Has passed a good night. Excessive secretion of bile has ceased. Clamorous for food, but I allow him only rice and sago; declines milk. He appears now to be free from all complaint. After this time nothing remarkable occurred. He had a strong appetite, and was allowed vegetable curry. For several evenings some heat of skin and acceleration of pulse were perceptible; but these soon went off from cold bathing, and a constant attention to keep his bowels in an open state.

Monday, May 18th, (fourteenth day).—Has been for some days past on the usual hospital diet; and feeling himself well in every respect, now expresses a wish to be discharged and return to his usual business, but, as the weather is exceedingly hot, (thermometer in the shade from 95° to 100°,) I have prevailed upon him to continue in the hospital till the setting in of the rains. I shall then, if possible, persuade him to remain in my own employment for the next twelve months, lest, if he were discharged, and should happen to die, of whatever disease, it might be alleged that he was, after all, carried off by a relapse of the hydrophobia.

REMARKS.

On hearing that a recovery from hydrophobia has been effected in the short space of two hours, by the single remedy of blood-letting, a doubt may probably occur to a person acquainted with the previous history of this formidable malady, and the nearly uniform failure of all attempts hitherto made for its cure, whether the disease now said to be cured was in reality a genuine case of hydrophobia, produced by the bite of a rabid animal. I admit the scepticism to be reasonable; for in the relation of a case, which has terminated so differently from all others yet on record, (not even excepting the case so suc-

cessfully treated by Mr. Tymon,) it is natural to suspect either some misconception or misrepresentation of facts, or some fallacy in the deductions derived from them.

An attentive perusal of the preceding narrative will, it is presumed, remove these doubts from the minds of the majority of readers; yet, as some individuals may not be convinced by that evidence, which, to others, appears full and satisfactory, and, as it is a matter of the utmost importance to future sufferers from hydrophobia, that no doubt should be allowed to remain, either as to the existence of the disease itself, in the case above related, or that the bleeding was the sole remedy, I shall, as briefly as possible, endeavour to establish the certainty of both those facts, beyond the possibility of contradiction.

To a person who has never seen a case of hydrophobia, I acknowledge the difficulty, nay, almost the impossibility, of conveying by words an adequate notion of the disease. The horrors of that state must be seen to be fully conceived; but being once seen by a medical observer of any discernment, they are indelibly fixed in the mind; and I contend that it would then be highly improbable that he should ever mistake any other disease for hydrophobia; or take hydrophobia for any of those affections to which it has been said to bear some resemblance; so deep and so permanent, I am convinced, would be the impression left on his mind by the contemplation of even a single case of hydrophobia. But when I state that my situation as surgeon to the Calcutta Native Hospital, for the last eighteen years, has afforded me opportunities of seeing the disease, which have fallen to the lot of few individuals in any country, and that no less than seventeen or eighteen cases of it have come under my observation within that period, in all of which both my diagnosis and prognosis (with the single exception of the latter in the case under consideration) have unhappily been but too fatally verified, it is not, I trust, laying claim to too great a share of discernment to assert, that I could not easily be mistaken in a case of hydrophobia; and that I should consider my being so as unlikely, as that an experienced surgeon should ever confound two diseases the most opposite in their nature; because, to an uninformed eye, they might both exhibit something of the same external appearance.

Farther, it has been usual with me, on the admission of a case of hydrophobia into the hospital, to send for some of my medical friends, not only that they might see a disease seldom occurring in private practice, but that I might have the benefit of their suggestions in regard to the treatment. On the present occasion, the promptitude necessary to the practice I had determined to adopt in the first case that occurred, and its astonishing effect in so suddenly and effectually subduing the disease, deprived me of the advantage I should now have derived in establishing the point in question, from the concurring testimony of a judicious medical friend. But though not permitted to give direct evidence as to the existence of the disease in the case above detailed, these gentlemen can yet vouch, that they were never called by me to see a case of hydrophobia in which there existed the slightest doubt of the nature of the disease; and it will hardly be contended that I was more liable to mistake it in this case, than on any former occasion.

If these facts and reasonings, combined with the account of the accident; the time that elapsed before the appearance of the symptoms; the statement given by the patient of the commencement of the disease; and by his friends, as to the state in which he appeared before he was brought to the hospital; the symptoms under which he laboured when he arrived there; should all be deemed insufficient to establish the real nature of the disease, I confess myself at a loss to conjecture what species of proof would be necessary for that purpose. The only defective point in the evidence appears to be our ignorance whether the dog by which Amier was bitten was actually mad or not; and though this cannot be proved by direct testimony, yet as it is known that the disease was prevalent among dogs, about that time, as will be hereafter noticed, it is presumed that this is an objection of very little weight. If, therefore, any individual, after duly considering all these circumstances, still continues in doubt as to the nature of the disease, may it not, in conclusion, be permitted to ask him what disease it was, if not hydrophobia.

That the disease, whatever it might be, was removed, and that almost instantaneously, by bleeding alone, admits, in my mind, of equally little doubt.

In Mr. Tymon's successful case, the symptoms only gradually disappeared, some of them remaining so late as the fourth day, and as opium, mercury, and antimony, had been largely used during the whole time, and the patient's system was evidently under the influence of the mercury, before he could be said to be free from the disease, an opinion might still be entertained, and actually was so, by many with whom I have conversed on the subject, that the cure was, after all, effected by the mercury, and not by the bleeding.

Dr. Berry himself, to whose rare and laudable zeal for the promotion of useful science, even at the period of closing a long and honourable career of public service, the world is indebted for the knowledge of Mr. Tymon's unprecedented case of success, alleges that the bleeding "saved Mason's life, by diminishing violent action, *and admitting the effect of medicines that in all former experience had uniformly failed.*"

As this notion too corresponds with the most prevailing theory of the disease, though that theory has not in a single instance been verified by the success of the practice to which it gave rise, I consider it of great importance to correct it; lest, by still expecting some good from mercury and opium in hydrophobia, the attention of the physician should be diverted from a sufficient abstraction of blood,—on which, and on which alone, as far as a single case can prove any thing, the life of the patient seems entirely to depend.

That the first bleeding in the case above related, wholly, though not permanently, removed every symptom of the disease, was proved, I presume, in the most ample manner, by the following six remarkable circumstances: 1st, the removal of the spasms; 2d, the freedom of respiration; 3d, the restoration of the power of swallowing fluids, and the absence of horror at their approach; 4th, the desire, instead of the abhorrence of a current of air; 5th, the inclination for a natural alvine evacuation; and 6th, the power of sleeping. All these unequivocal indications of recovery took place during, or immediately after the first bleeding; and as none of them ever happened before to a patient in hydrophobia, except near the close of the melancholy scene, when they denote an entire sinking of the powers of life, rather than the cessation of disease, it seems but

fair to ascribe them to a remedy, which had never before been used as it was on this occasion, or, if so, unluckily not at the time when it was capable of doing good.

When a recurrence of the disease was threatened in two hours afterwards, the power of the remedy was again conspicuously manifested, and a second bleeding *ad deliquium* instantly stopped the progress of the symptoms, and before a single particle of medicine of any kind had been given, permanently extinguished the morbid condition, whatever it may be, in which the essence of the disease consists.

These two points, therefore, appear to be fully proved, namely, that the disease was hydrophobia, and that the cure consisted in blood-letting alone.

But notwithstanding this unprecedented success, I am not so sanguine as to believe that venesection will cure every case of hydrophobia. It is probable that there is a period in the disease beyond which its curative effect cannot extend. What that period is, cannot be known without a more enlarged experience. But this very uncertainty affords only a more powerful reason for losing no time, in resorting to the copious abstraction of blood, upon the very first appearance of unequivocal symptoms of the disease, as the delay of only a few hours may prove fatal to the patient.

In referring to notes which I have preserved of fourteen cases of hydrophobia, I find that eight of the patients died within six hours after admission. In these I cannot believe that bleeding would have done any good. But of the remaining six who lived respectively 11, 13, 15, 20, 36, and 49 hours after admission, it is certainly reasonable to believe that it might have saved three or four. In a case so entirely hopeless, however, there could scarcely be harm to the individual, from trying it at any period of the disease. And as it is only by such trials that the real limits of its power can ever be ascertained to any useful purpose, it is rather desirable than otherwise, that they should be made. One disadvantage, however, eventually arising from such trials, requires to be guarded against. The medical profession, taught by innumerable disappointments, admit very cautiously the claims of any new mode of practice to general adoption. If several patients in hydrophobia, therefore,

should happen to be bled in an advanced stage of the disease, and die,—as they inevitably would do whether they had been bled or not—such cases would be quoted against the new practice as failures, and might tend so far to bring the remedy into discredit, as to prevent its being used, even in cases where it might have proved the certain means of saving life.

I am the more desirous of noticing the unfavourable effect upon the adoption of the new practice, which may eventually arise from bleeding at too late a period of the disease, and of entering a strong caution against the hasty rejection of the remedy from such instances of failure, in consequence of the circumstance having very nearly happened to myself, only three days before the occurrence of the case of Amier.

On Saturday evening, the second of May, 1812, a native of Arracan, employed in Calcutta as a cook, was brought to the hospital, labouring under symptoms of hydrophobia. I went to him that moment, with the full determination of putting in practice the plan that had succeeded in the hands of Mr. Tymon; but I found that the unfortunate sufferer had been ill, according to the account of his friends, for fifty-six hours. His pulse was imperceptible—his skin cold, and his features sunk. I therefore got him to swallow one hundred drops of laudanum, which he effected, as frequently happens, with greater ease than is usual in an earlier stage of the disease; and ordered an enema with three hundred drops. The patient was dead in half an hour. Now what I wish to impress upon the mind of the reader is—that if, in this case, the disease had been somewhat less advanced—the pulse still perceptible, and the strength less sunk, I should certainly have bled the patient;—which, at such a period, could scarcely have prevented death. It would more probably have appeared to have accelerated that event; and, if so, might consequently have had the effect of preventing my pushing the bleeding in the case of Amier to the extent necessary to the cure. I must therefore here insist, that numerous failures in an advanced stage of the disease, will form no just ground for the rejection of a remedy, which has been so incontestably proved to have cured the disease when used at an earlier period. As well might the practitioner reject bleeding in the commencement of peripneumony

or enteritis in a robust athletic patient, because in each disease there is a period after which the detraction of blood, so far from curing, serves only to hasten the fatal event.

Nothing, however, can fix the real value of the remedy but experience. It is highly desirable that this may be speedily obtained; and as the disease does, and must very frequently occur in this country, whether we possess the means of curing it or not, we cannot doubt that but a very short time will elapse without further trials of this practice; and it may be presumed that the medical practitioners, who are so widely distributed throughout India, will fairly and circumstantially communicate to the public the result of their experience, whether attended with success or not.

It may be necessary to observe, however, that merely opening a vein and drawing a considerable quantity of blood is *not* the practice. The vein must be opened by a large orifice, the blood quickly evacuated, and allowed to flow, without regard to measurement, *ad animi deliquium*. Nothing less than this is capable of at once arresting the progress of the disease, relieving the spasmodic affection of the heart and arteries, suppressing excessive sensibility and irritability; and, in short, of admitting the restoration of that due balance of action and influence both in the circulating and nervous systems, on which the continuance of life and health seems to depend.

But I lay no stress on this or any other pathology of the disease. Well authenticated trials of the remedy in an early stage of it are what I desire to see. If it fails in many of these, when used in the manner above proposed, within twenty-four, or, to speak with more latitude, thirty hours, of the commencement of the symptoms, I confess I shall feel much disappointed; and not a little mortified, to be obliged, after such fair prospects, to reject a remedy, which has effected twice, in the short space of seven months, what was scarcely ever effected before; and to class it with that useless farrago of remedies and practices, which, though used hundreds of times, and for a series of ages, have never once been known to accomplish a cure of hydrophobia.

With respect to the subsequent treatment of the patient, it is scarcely necessary to make any remark. The case clearly

shows that for the hydrophobia no subsequent treatment was required. But as this and many other cases on record, shew a great disposition to disordered and excessive action of the liver, it may perhaps hereafter be found useful to administer mercury, both as an evacuant, and to the extent of affecting the mouth, with or without opium, according to circumstances.

It is usual, when new and successful expedients are first promulgated, to wonder why they never were thought of before. In conformity to this habit, I have frequently, within the last ten days, been asked why, in a disease so often proved incurable by other means, bleeding was not before tried? The fact is, however, that *bleeding has often been tried.* But owing, probably, to the evacuation not being pushed far enough, when used in an early stage of the disease—or to the period for its beneficial employment having elapsed, before it was resorted to, the relation of the cases in which it was used afforded little or no encouragement to farther trials; while the theory that has prevailed for nearly a century in regard to the nature of the affection, and its classification with diseases of the nervous kind, accompanied by great debility, tended directly to discourage all lowering plans of cure, and to point out antispasmodics and tonics as the only resource in hydrophobia.

Dr. Mead, who was very confident that he had found an infallible preventive of the disease, in *a little liverwort and black pepper*, aided by bleeding and cold bathing before the commencement of the course of medicine, says, " As to all other ways of curing the hydrophobia, I own I have not been so happy as to find any success from the many I have tried. Bathing at this time is ineffectual. *I have taken away large quantities of blood;* have given opiates, volatile salt, &c. &c. &c. —All has been in vain, *because too late.*" Notwithstanding his disappointment, he still concludes, " If any relief could be expected in this desperate state, I think it would be from *large bleeding even ad animi deliquium, before the fibres of the membranes have lost their natural force by convulsions.* But after all it will generally happen, that (as the Greeks said upon deplorable cases) ' Death will be the physician that cures.' " This, though a recommendation, was certainly no great encouragement to blood-letting.

The doctrines of Boerhaave also led him and his pupils to recommend and practice blood-letting in hydrophobia. The celebrated Leyden Professor says, "The distemper is to be treated as one highly inflammatory, upon the first appearance of the signs which denote its invasion, by blood-letting from a large orifice, continued till the patient faints away; and soon after by enemata of warm water and vinegar," &c. &c. and he adds, "that this practice is supported by some small number of trials." But the particulars of this successful practice are not given.

I find, however, a trial of it at Edinburgh, more than sixty years ago, by the late Dr. Rutherford, a pupil of Boerhaave's, who took away *gradually* sixty-six ounces of blood from a patient, who had already been bled the same morning. As this patient lived forty-eight hours after the large bleeding, it is probable that it was used somewhat early in the disease, and should therefore, it may be said, have succeeded. Why it did not, it is impossible now to tell, unless the word *gradually* may be thought to afford some explanation; but I am persuaded the circumstances attending its failure had great weight in deterring others from pursuing the plan recommended by Boerhaave; and in giving an entirely different direction to the practical views of physicians, on the subject of hydrophobia.

On the failure of bleeding in this case, Dr. Rutherford, who then, with great reputation, filled the practical chair of the most celebrated school of medicine in Europe,—candidly retracted an opinion, which he had learned from Boerhaave, and which had directed the measures he took. He declared in his public lectures, that "he was convinced now, that the hydrophobia is spasmodic and not a high inflammatory disease. That though bleeding may be useful in preventing furiousness, neither that nor the proper antiphlogistic method are to be depended upon as the proper cure of hydrophobia; that in such cases, after bleeding once or twice, he would order *sal succini*, *musk*, opium, and perhaps *blisters:*"—Thus, at once sending abroad into all parts of the world the opinion that large bleeding was useless in hydrophobia, and inculcating the use of antispasmodics only.

Dr. Cullen says scarcely any thing on hydrophobia, farther

than that his chief reliance would be on mercury. Macbride asserts that "Doctor Nugent was the first that pointed out the true nature of hydrophobia—which before his time was generally considered as an inflammatory disease. Dr. Nugent's patient was *largely blooded*, and took, moreover, large quantities of musk and cinnabar as well as opium; and, towards the close of the cure, opium was given along with camphor, musk, and assafœtida. *But the opium is what we are chiefly to rely on.*" —Thus again withdrawing the attention of the practitioner from the large abstraction of blood, to which the cure in this case was most probably to be ascribed.

It is needless to multiply quotations to prove, that nearly the same opinion of the disease, and the remedies most applicable to it, have prevailed, with little variation, up to this day, with the single exception perhaps of Dr. Rush, who, in consequence of his peculiar notions about inflammation, but which do not seem to be countenanced by the appearance of the blood drawn from hydrophobic patients, again inculcated the necessity of blood-letting. Recent experience proves, that he was right. But it is to be regretted, that neither the cases to which he refers for the success of the practice, nor his amended hypothesis of the resemblance of hydrophobia to malignant fever, were considered of sufficient weight to encourage its adoption by other practitioners.

Finding therefore so many authorities against bleeding in hydrophobia, and not a single cure fairly ascribed to it, for no dependence can be placed on those vaguely mentioned by Boerhaave, it is by no means surprising that it should, for more than half a century, scarcely ever have been thought of as a remedy in this disease. I am aware that it has sometimes been used as an auxiliary, when the pulse has been full and the strength great, in order to render the patient more manageable. But as it has till lately never been employed as the remedy of sole dependence, nor applied in the manner necessary to produce a decided effect upon the disease, I confidently trust that its failure, nearly up to the present day, will not be considered as militating against the expectation of success, which I think we are now fairly entitled to entertain from its future employment.

It is at any rate highly encouraging to know, that, in the only three cases in which it has been trusted to as the principal or the sole remedy, it has succeeded to our utmost wishes.

The first case is that by Dr. Burton in America, which was suggested by Dr. Rush's lectures, and was published about seven years ago, in different periodical works. But unfortunately, in consequence of the case not being very accurately related, and its being combined with some fanciful theory, it does not appear to have been acknowledged as a clear instance of hydrophobia; and the benefit which might otherwise have been derived from it, was wholly lost to the world. Whether it was actually a case of hydrophobia or not is not now worth disputing, being in possession of Mr. Tymon's case, and of that which has given rise to these already too greatly extended remarks.

I cannot, however, conclude without saying a few words on the practices which have been principally in use up to this time. Never having seen Dr. Nugent's case,—the only instance of apparently authenticated recovery from hydrophobia with which I was acquainted, previous to these three,—is one related by Dr. Shadwell, in the Memoirs of the London Medical Society, in which, on the authority of a Greek Manuscript, oil was used both externally and internally. Relying on this example, I gave oil a very fair trial in several of the first cases that fell under my care. But, although I often got the patient to swallow a considerable quantity of it, and applied it frequently by enema, as well as to the skin by almost incessant frictions, it never appeared to do the least good. I therefore abandoned it.

I have subsequently used every mode of treatment that I have ever heard or seen suggested, with equally little success, except arsenic, which, though with no better hope, was to have been my next trial, had not Mr. Tymon's case fortunately occurred, to point out the practice which has already so well justified the confidence reposed in it.

On those occasions, besides the full trial given to oil, I used opium to a great extent in every possible way; mercury, musk, camphor, blisters, galvanism, and enemata of laudanum, and infusion of tobacco, all to no purpose. Nothing ever alleviated

a symptom except the two last, which certainly did lessen the spasms; and therefore, when bleeding may hereafter be used too late to succeed, I would recommend them as remedies, capable, though not of preventing death, yet of allowing he fatal event to take place with less suffering to the unhappy patient than any thing else with which I am acquainted.

On the recommendation of Dr. Bardsley of Manchester, a gentleman who has, with unwearied zeal, endeavoured to investigate the nature of hydrophobia, with a view to the discovery of its cure, and even to the extermination of the disease from the United Kingdom, I also gave a very fair trial to volatile alkali. Contrary to all expectation, I succeeded in getting into the stomach no less than three drachms of carbonate of ammonia, made into bolusses with crumb of bread. But the event was unhappily just the same as in all former cases.

Dr. Bardsley was led to this suggestion by the perusal of Mr. Williams's case of recovery from the bite of the *Cobra de Capello*, by means of *Eau de-luce*, and he endeavours to recommend its adoption by the following observation: "Surely, in the treatment of so fatal a disease as canine madness, it is proper to adopt any method of cure founded on RATIONAL PRINCIPLES. *Analogy, under these circumstances, seems to be our surest guide.*"

It is melancholy to relate, that though hydrophobia has been unusually frequent in England of late years, and many cases of it have been treated by the most eminent practitioners in London, both in hospitals and private practice, yet not a single case of recovery is recorded.

Dr. Parr, author of the Medical Dictionary, published for the express purpose of exhibiting the state of medical science up to the present time, after telling that every thing has been tried, and that every thing has failed in effecting a cure, consoles his reader by acquainting him with the infallibility of cutting out the part as a preventive, adding emphatically in Italics: "*In short, full, effectual, and* COMPLETE EXCISION *of the wounded part, is the only certain means of relief;* AND THIS IS CERTAIN." But still leaving us in the same hopeless condition as to any means of cure after the disease has actually taken place.

Doctor John Hunter concludes a most able paper on the history of the disease, and the trials made for its cure, with these words: "After the symptoms of hydrophobia have appeared, no medicine or remedy that has hitherto been used, has relieved, much less cured the disease." And finally,

A well-informed anonymous writer, in the Medical Annual Register for 1808, after presenting a sketch of the practice that had been pursued in London during that year, and noticing the failure of every expedient, sums up his history with this opprobious sentence. "On the whole, therefore, we may be considered as remaining in the most entire ignorance, both of the nature of the disease, and of the method of cure, or even of palliating a single symptom."

Such was the disheartening language universally held on the subject of hydrophobia. I humbly trust that it can be held no longer. That the case above related, coming so soon after that of Mr. Tymon, entitles us to indulge more animating views for the future; and that it will not be long before additional experience shall serve to confirm the hope, which seems now to rest on so promising a foundation, that a remedy has at length been discovered for this hitherto uncontrollable disease.

It is mortifying to the pride of science to acknowledge it,—but if farther trials of bleeding *aa deliquium* shall confirm its power of curing hydrophobia when used early in the disease,—it is nevertheless impossible to conceal, that this *solum et unicum remedium* has apparently been hitherto overlooked, in consequence of an overweening fondness for system, which led medical writers to class hydrophobia with diseases of the nervous kind, and to dwell particularly on its resemblance to tetanus. That disease being considered as highly asthenic, blood-letting, perhaps without sufficient reason, has been thought inadmissible. Antispasmodics and tonics have been employed in all quantities and forms, and though by such remedies scarcely one case of tetanus in fifty has ever been cured, the same treatment has been rather preposterously, it should seem, transferred to hydrophobia —because, under such hopeless circumstances, *analogy has been said to be our surest guide.* Whither has it guided us? Never certainly to a single cure of hydrophobia. It may, perhaps, with greater truth be said to have

been an *ignis fatuus*, which has served to lead us into difficulties and dangers, rather than to conduct us into the salutary path of curative science; and that, perhaps, in more diseases than the one under immediate consideration.

After expressing so little respect for analogy, the professed guide of physicians, in the treatment of hydrophobia, shall I not be accused of inconsistency, or of indulging in notions of too speculative a nature, if I offer a hint that some use may be derived from favourite analogy, by pursuing it in an opposite direction? and instead of applying to hydrophobia the treatment which seldom succeeded even in tetanus itself, we now transfer to tetanus, and perhaps to other diseases of the same kind, the practice which has been incontestably proved, in two instances at least, if not in three, to have been successfully employed in hydrophobia.

Almost all authors have spoken of this analogy, and some have gone so far as to affirm, that tetanus may be easily mistaken for hydrophobia. I confess myself to be of a different opinion; being fully persuaded that no person, who has often seen both diseases, could ever mistake the one for the other, and that for the following reasons: First, in tetanus the lower jaw is immovably fixed, and the patient speaks by the motion of his lips only, with a hissing kind of noise,—whereas in hydrophobia, the lower jaw is movable to any degree; and is, in fact, in the exacerbations, almost in perpetual motion, often resembling the action of hawking or retching, for the purpose of bringing forward and expelling the viscid saliva, which constantly collects about the fauces. And, in the second place, that though the swallowing of fluids may be difficult or impossible in tetanus, and the attempt even accompanied with convulsions of the face, throat, and chest, yet the obstacle is confined to the actions connected with deglutition alone; and the name, the approach, and the touch of fluids have never, in my experience, thrown the patient into the agony of horror, distress, and despair, which is invariably witnessed in hydrophobia.

Some Observations on Spina Bifida.

By Astley Cooper, Esq. F.R.S. Surgeon to Guy's Hospital.

[From the Medico-Chirurgical Transactions, Vol. II.]

I probably should not have read to the Society the following remarks on Spina Bifida at the present time, had not I been urged to it by those on whose judgment and friendship I have been accustomed to rely. The cases which form the basis of this paper having been shewn to Drs. Marcet, Yelloly, and Farre; to Mr. George Young, and to Mr. Barlow of Blackburn; they were of opinion that they not only deserved publication, but strongly urged that they ought not in justice to remain concealed, as there were, probably, many children at this time in the kingdom who labour under the disease in a state to admit of remedy, and whose lives might fall a sacrifice to withholding this communication from the public. Nor will it, I trust, be considered that I am publishing precipitately, by those who will give themselves the trouble to visit the cases which I am now about to describe, as they will find that one has been under my observation for four years, another two years and a half, and the third for the space of eighteen months; so that a considerable time has been allowed to watch the effect of the treatment which is here recommended.

CASE I.

James Applebee, Baldwin-street, Old-street, was born on the 19th May, 1807, and his mother immediately after his birth observed a round and transparent tumor on the loins, of the size of a large walnut.

Mr. Deering, who was her accoucheur, requested Dr. Petch to see the child with him, who informed the mother of the dangerous nature of the complaint, and of the probability of its fatal termination.

On the 22d of June, 1807, the child was brought to my house, and I found that although it had spina bifida, the head

was not unusually large; that the motions of its legs were perfect, and its stools and urine were discharged naturally.

I applied a roller around the child's waist, so as to compress the tumor, being induced to do so from considering it as a species of hernia, and that the deficiency of the spine might be compensated for by external pressure.

The pressure made by the roller had no unpleasant influence on its voluntary powers; its stools and urine continued to be properly discharged, but the mother thought that the child was occasionally convulsed.

At the end of a week, a piece of plaster of Paris, somewhat hollowed, and that hollow partly filled with a piece of lint, was placed upon the surface of the tumor: a strap of adhesive plaster was applied to prevent its changing its situation, and a roller was carried around the waist, to bind the plaster of Paris firmly upon the back, and to compress the tumor as much as the child could bear.

This treatment was continued until the month of October, during which time the tumor was examined about three times a week, and the mother reported that the child was occasionally convulsed.

When the child was five months old a truss was applied, similar in form to that which I sometimes use for umbilical hernia in children, and this has been continued ever since.

At the age of fifteen months it began to make use of its limbs; it could crawl along a passage, and up two pair of stairs.

At eighteen months, by some accident, the truss slipped from the tumor, which had become of the size of a small orange, and the mother observed, when it was reduced, that the child appeared in some degree dull; and this was always the case if the truss was left off for a few minutes, and then re-applied.

At fifteen months he began to talk; and at two years of age he could walk alone.

He now goes to school, runs, jumps, and plays about as other children. His powers of mind do not appear to differ from those of other children. His memory is retentive, and he learns with facility. He had the measles and small-pox in the first year, and the hooping-cough at three years. His head, previously and

subsequently to the bones closing, has preserved a proper proportion to the other parts of his body.

The tumor is kept by the truss entirely within the channel of the spine; but when the truss is removed, it soon becomes of the size of half a small orange. It is therefore necessary that the use of the truss should be continued. When the truss is removed, the finger can be readily pressed through the tumor into the channel of the spine.

CASE II.

January 21st, 1809, Mrs. Little, of No. 27, Lime-house Causeway, brought to my house her son, aged ten weeks, who was the subject of spina bifida.

The tumor was situated on the loins; it was soft, elastic, and transparent, and its size about as large as a billiard ball when cut in half; his legs were perfectly sensible, and his urine and fæces were under the power of the will.

The child was taken to a surgeon of eminence, who said that nothing could be done, and that the child would not live more than four or five months, and ordered the swelling to be washed with vinegar and water.

Having endeavoured to push the water contained in the tumor into the channel of the spine, and finding that, if the whole was returned, the pressure would be too great upon the brain, I thought it a fair opportunity of trying what would be the effect of evacuating the swelling by means of a very fine pointed instrument, and by subsequent pressure to bring it to the state of the spina bifida, in Applebee's child.

I therefore immediately punctured the tumor with a needle, and drew off about two ounces of water.

On the 25th of January, finding the tumor as large as before it had been punctured, I opened it again, and in the same manner, and discharged about four ounces of fluid. The child cried when the fluid was evacuated, but not whilst it was passing off.

On January 28th, the tumor was as large as at first. I opened it again, and discharged the fluid. A roller was applied over the tumor and around the abdomen.

February 1st, it was again pricked, and two ounces of fluid discharged.

On the 4th, three ounces of fluid were discharged.

On February 9th, the same quantity of fluid was evacuated as on the 4th; but instead of its being perfectly clear, as at first, it was now sanious, and it had been gradually becoming so in the three former operations.

On the 13th, the same quantity of fluid was taken away; a flannel roller was applied over the tumor and around the abdomen; a piece of pasteboard was placed upon the flannel roller over the tumor, and another roller over the pasteboard to confine it.

On the 17th three ounces of fluid, of a more limpid kind, were discharged; the pasteboard was again applied.

On the 27th the surface of the tumor inflamed; the fluid, not more than half its former quantity, was mixed with coagulable lymph, and the child suffering considerable constitutional irritation, was ordered calomel and scammony, and the rollers were discontinued.

February 26th, the tumor was not more than a quarter of its former size; it felt solid; the integuments were thickened, and it had all the appearance of having undergone the adhesive inflammation.

On the 28th it was still more reduced in size, and felt solid.

On March the 4th it was in the same state as on the 28th of February.

March the 8th, the swelling was very much lessened; the skin over it thickened and wrinkled; a roller was again had recourse to; a card was put over the tumor, and a second roller was applied.

March the 11th, the tumor was much reduced; the skin covering it was a little ulcerated. On the 15th it was flat, but still a little ulcerated.

On the 27th the effused coagulable lymph was considerably reduced in quantity, and of very firm consistence.

On the 2d of May nothing more than a loose pendulous bag of skin remained, and the child appearing to be perfectly well, the bandage was soon left off.

On December the 18th it was attacked with the small-pox, and went well through the disease.

The skin now hangs flaccid from the basis of the sacrum; its centre is drawn to the spine to which it is united, and thus the appearance of a navel is produced in the tumor by retraction of the skin.

The pricks of the needles are very obvious on each of the punctured parts of the tumor, forming slight indentations.

My friend and neighbour, Dr. Yelloly, saw the progress of the cure in this child, it being from time to time sent to his house.

CASE III.

January 1810, Hannah Jackman, aged eleven days, was brought to my house with spina bifida, having *an ulcerated state of the skin over it.* The woman had been delivered by Mr. Rosewarn, a pupil of Dr. Haighton's and Dr. H. had seen the child.

Jan. 5th, the tumor was punctured with a needle, and the fluid was discharged.

Jan. 9th, the tumor was filled with coagulable lymph, as was proved by its inflamed appearance, and the firmness of its feel; the child appeared in great pain, had no stool, and suffered considerable constitutional irritation; it was ordered a dose of calomel and a glyster.

On the 10th, it had evacuations both by stool and urine, and on the 11th Mr. Rosewarn reported that the tumor was less in size; that it was still solid; that the child was considerably torpid, but sucked heartily.

On the 13th the ulcer in the spina bifida was almost healed; the tumor was flaccid; convulsions which had begun on the evening of the 11th had been frequent to the 13th; the child foamed, struggled very much, and seemed very weak.

On the 16th my assistant, Mr. Lewis, saw the child, and reported that the convulsions ceased on the 15th; that the child was much reduced, and that it was costive; the tumor was nearly level with the surrounding skin, soft, and of a red colour; it had still a small ulcer on it. Glysters were directed to be given.

Jan. 19th, the tumor had become very small, and but a trifling ulcer remained. The child, however, was convulsed; its eyes were drawn under its upper eye-lids; it was much reduced; it had retention of urine for a day and a night, and was extremely costive; it had ceased to suck for several days, but began to take the breast again on that morning.

Jan. 23d, the child sucked heartily; the tumor appeared to contain some fluid in its centre; the ulcer upon its surface was healthy, and nearly healed.

Jan. 26th, the tumor was somewhat increased; the child sucked, was free from convulsions, and improved in strength.

February 3d, the ulcer was healed; the tumor was much reduced, and the child greatly improved in its strength.

The child was again brought to me on the 13th, at which time the adhesive inflammation appeared to be complete. On the 15th of the same month it was seized with convulsions, which continued until the 24th; its eyes became inflamed on the 13th, and continued so until its death, and it died on the 25th of February.

Inspection on the 27th.—The bones of the cranium were very much separated at the sutures; there was no hydrocephalus internus; the brain was unusually soft; the ventricles contained about six ounces of a limpid fluid, but there were clots of coagulable matter floating in it.

In the preparation which I have now the honor to show to the Society, it will be seen that the adhesive inflammation is very complete, so that no cavity is left for the reception of the spinal fluid.

CASE IV.

——Sterney, son of Mr. Sterney, a butcher at Peckham, was brought to me on the 10th January, 1810; it had a very large spina bifida at the basis of the sacrum.

I opened it on the 15th by the same means as I have before described, and discharged about an ounce of limpid fluid.

On the 17th I again opened it, and removed about an ounce of fluid, which was a little bloody; the child had been restless and had green stools, which is always a marked sign of irritation in children.

On the 19th the child had two convulsions; the tumor was opened; the fluid was a little sanious, and the tumor contained some solid matter; the child was much purged, and this was directed not to be repressed.

Two ounces of fluid were discharged on the 24th, and on the 26th an ounce and an half of fluid was drawn off and a dossil of lint was applied upon the opening from the spinal canal into the tumor; this was firmly bound down by a roller.

On the 30th of January, 1st of February, 4th, 11th, and 26th, the tumor was opened.

Two ounces of fluid were also discharged on the 27th, and then a piece of sheet lead was placed upon the tumor lined with lint and covered by a roller.

On February 28th, and on March 1st and 2d, it was opened.

On the 3d, plaster of Paris was applied upon the swelling after discharging its fluid; this was confined by a roller tightly applied.

On the 4th it had convulsive twitchings of its hands, and quickened respiration; it was restless, hot, and cried much; half an ounce of fluid was discharged.

5th.—Vomited frequently; the swelling was again opened.

6th.—The fluid was discharged; lint and adhesive plaster were afterwards applied, and this plan was repeated on the 8th and 9th.

10th.—The tumor was not opened, because it felt so hard as to induce me to believe it had adhered.

11th.—Stools green; vomited frequently; bandage still applied, but not the adhesive plaster.

13th.—Child sick; stools green.

14th.—Two ounces of fluid discharged; plaster and roller applied.

17th.—Plaster of Paris applied wrapped in lint, and bound very tight.

19th.—Comatose, and convulsed, as it was thought, from the pressure of the bandage and plaster of Paris; these were removed, and a lighter bandage applied.

22d.—The child, which on the 19th appeared to be dying, is better to-day.

24th.—Is more lively; it sucks but little, the tumor being very large and full; a truss was applied.

27th.—The truss is to be continued, as the tumor is smaller.

30th.—Tumor reduced; the child has cut a tooth; the truss continued.

April 4th.—Appeared to be suffering pain and sickness from the truss, and it was removed.

9th.—Tumor pricked, and the truss re-applied.

14th.—The tumor again pricked.

18th.—Continues to wear the truss; the tumor was opened to-day; a handkerchief was doubled under the truss; the child vomited after its application.

22d.—Appeared in good health; the tumor was pricked, and again on the 26th, when there was some coagulable lymph in the fluid.

May 2d.—The swelling was pricked; also again on the 6th, and the quantity of fluid which was discharged was not diminished, continuing to amount to from two to three ounces.

The child was now sent to Messrs. Sharpe and Arnauld, Surgeons at Peckham, who attended the family, and who pricked the swelling at different times, and discharged the same fluid both in quantity and quality which I have described.

The adhesive process was, however, unequal to close so large an aperture as existed from the spine in this case, and I therefore abandoned the adhesive plan, and directed that the same mode of treatment should be pursued as in Applebee's case; that a truss should be applied, and constantly worn upon the part, and that the palliative rather than the radical cure should be attempted.

The tumor has been gradually diminishing under this mode of treatment; the child has grown in proportion to other children, and at the age of a year and an half is a very healthy boy.

These, then, are the two modes of treatment which I have pursued for the relief of those who are afflicted with spina bifida; the one palliative only; the other radical.

The first consists in treating the case as a hernia, and applying a truss to prevent its descent; and the second in producing

adhesion of the sides of the sac, so as to close the opening from the spine, and stop the disease altogether. The first is attended with no risk. The truss forms an artificial vertebra when the natural is defective, a buttress which supports the part, and prevents the increase of the disease; but in this mode of treatment the truss is required in future life, for if discontinued the tumor re-appears, and will grow, as hernia does, to great magnitude, but with more fatal consequences.

On the contrary, the adhesive mode of cure exposes the patient to much constitutional irritation, but leaves him without the apprehension of the future return of the disease. And a finer and more healthy child cannot be seen than that which was cured by this mode of treatment.

It may be also observed that this mode does not prevent the subsequent attempt at the palliative treatment, if the radical should not be successful.

But as there are many cases of spina bifida which cannot be cured, it is right that I should state what are those which will not admit of relief.

If the tumor is connected with an unnatural enlargement of the head, hydrocephalus internus is conjoined with spina bifida; and the water will accumulate in the ventricles, if the tumor in the loins is attempted either to be palliated or radically cured.

If the lower extremities are paralytic, or the fæces and urine are discharged involuntarily, there is no hope of relief.

If the tumor has burst at the time of birth, or bursts soon after, there is little hope of cure; for although the opening in the skin may be closed by lint and adhesive plaister, and union be produced so as to admit of no further discharge of water, yet hydrocephalus internus will still succeed. In a case which I saw with Mr. Young, Surgeon, at Lambeth, I closed the opening, and applied a truss, but the head enlarged, and the child died after eight months with hydrocephalus internus.

The deficiency of the spine is sometimes so great as to lead to the production of a most extended tumor at the time of birth, and when this is the case the nerves are so far protruded from the spinal canal as to injure the structure of the spinal marrow, and to render every attempt at cure unavailing.

I should feel myself deficient in that liberality with which our profession ought ever to be marked, and usurping more than my due, if I did not state that the principle of the radical cure as proposed for Spina Bifida, is similar to that recommended by Mr. Abernethy in his work on Psoas Abscess.

The mode, however, which I have employed for the purpose is, I believe, the only safe one, that of puncturing the part with a needle; for every opening of a larger size will be attended with the utmost danger.

I have for many years used this plan in cases of ganglia, when I could not burst them by a blow or excite their removal by pressure or irritation; and I have never seen it followed by inflammation or any serious consequence; and it may be used in cases of accumulations in joints and other cavities where larger openings are dangerous.

Dr. Marcet was so kind as to analyse the fluid which was taken from the spina bifida of Little's child, and will probably soon favor the Society with the result of his observations on this fluid, compared with that of hydrocephalus internus.

A Case of Aneurism by Anastomosis in the Orbit, cured by the Ligature of the common Carotid Artery. By BENJAMIN TRAVERS, Esq. *Demonstrator of Anatomy at Guy's Hospital, Surgeon to the Hon. East India Company, and to the London Infirmary for curing Diseases of the Eye.*

[From the Medico-Chirurgical Transactions, Vol. II.]

FRANCES STOFFELL, (aged 34, a healthy active woman, of fair complexion, middle stature, and the mother of five children,) on the evening of the 28th of December, 1804, being some months advanced in pregnancy, felt a sudden snap on the left side of her forehead, which was attended with pain, and followed by a copious effusion of a limpid fluid into the cellular substance of the eyelids on the same side. For some days preceding she had complained of a severe pain in the head, which was now increased to so great a degree, that for the space of a week she was unable to raise it from the pillow. The œdema-

tous swelling surrounding the orbit was reduced by punctures; an issue was set in the temple for a smart attack of ophthal mia which supervened, and leeches and cold washes were applied. She now first perceived a protrusion of the globe of the eye which affected the sight, and a circumscribed tumor, elastic to the touch, about as large as a hazel nut, appeared upon the infra-orbitary ridge. Another softer and more diffused swelling arose, at the same time, above the tendon of the orbicularis palpebrarum. The lower tumor communicated both to the sight and the touch, the pulse of the larger arteries; the upper gave the sensation of a strong vibratory thrill. The swellings grew slowly, and the skin between the eyes and that of the lower eyelid became puffed and thickened. The globe of the eye was gradually forced upwards and outwards, and its motions were considerably impeded. She had a constant noise in her head, which, to her sensation, exactly resembled the blowing of a pair of bellows. The pulsatory motion of the tumors was much increased by agitation of mind, or strong exercise of body. But the most distressing of her symptoms was a cold obtuse pain in the crown of the head, occasionally shooting across the forehead and temples. She was compelled to rest the left side of her head on her hand when in the recumbent posture, and found the beating and noise to increase sensibly when her head was low and unsupported.

Such was the substance of the patient's report when I was requested to see her by my friend Dr. Cholmeley, assistant physician to Guy's hospital. Her physiognomy was hard and coarse, and the skin in the region of the orbits appeared morbidly thick and wrinkled. The eyebrow of the diseased side was straitened, and driven from two to three lines above the level of the opposite eyebrow. The hollow of the orbit was lost, the superior lid rising convex from the superciliary ridge, owing to the strained elevation of the globe of the eye. The upper half of the inner canthus was filled by the thrilling tumor, which presented a loose woolly feel, was very compressible, and when firmly compressed, offered a slight pulsation. The veins of the superior lid were varicose from distension; the skin was much pursed over the lacrymal sac, and the veins on the sides of the nose turgid. The lower tumor, which projected above

the suborbitar hole, was of a conical shape, and firmly elastic to the touch. The under lid was raised as far as to the outer angle of the orbit, above the apex of the cheek. This lower tumor could be emptied or pressed back into the orbit, but the pulsation then became violent; and from the increased pressure of the globe upon the roof and side of the orbit, the pain was insupportable. Careful compression of the temporal, angular, and maxillary arteries produced no effect on the aneurism. Upon applying my thumb to the trunk of the common carotid, I found the pulsation cease altogether, and the whiz of the little swelling was rendered so exceedingly faint, that it was difficult to determine whether it continued or not. The recent increase of puffiness in the skin over the root of the nose, and below the inner angle of the opposite eye, had given alarm to the patient and her friends, who feared, not without some appearance of reason, a similar affection of the right orbit.

When I first saw the disease, I felt persuaded that it could be no other than that described by Mr. John Bell, under the term 'Aneurism by Anastomosis.' Indeed it bore so strong a resemblance in its principal features to several of Mr. Bell's cases, and in particular to that communicated by Mr. Freer of Birmingham, whose patient refusing assistance expired of hemorrhage, that I considered the sensible growth of the disease an argument of sufficient force to justify any rational effort at its restriction. From the character of similar cases, and the idea which I had formed of this, it was to be expected, that, although it had been slow in its formation, it would be rapid in its increase; and unlike the aneurism of trunks, would resist control as it acquired size. I first tried the effect of pressure on the swelling, but, although moderate, it could be borne only for a very limited time, by reason of the pain attending the exasperated action of the arteries. Cold applications had been already made use of without any evident advantage, but indeed the duration and aspect of the disease made this remedy appear trifling. Excision, the only method of which in similar cases experience had confirmed the success, was clearly impracticable without extirpation of the eye; and from the great displacement of the globe, and the obvious origin of the disease within

the orbit, I considered the result of such an operation to be most precarious. Being satisfied of the growth of the disease; knowing from a late happy precedent the perfect practicability*, and under favorable circumstances the moderate risk of placing a ligature on the carotid artery; and particularly reflecting that the obstruction of such a channel, must, at all events, be followed by a sensible and permanent diminution of the impulse of blood destined to the disease, I proceeded to the operation on Tuesday the 23d of May, 1809, in presence of Dr. Cholmeley, Mr. George Young, Mr. Brickenden, and other gentlemen.

The patient was laid supine; the neck raised by a pillow, the chin slightly turned to the left shoulder. An incision, about two inches and a half in length, was commenced at the distance of one inch above the sternal extremity of the clavicle, and carried in an oblique direction along the anterior edge of the mastoid muscle. The fibres of the muscle being exposed, its edge was raised, and the sheath of the vessels cautiously cut open on the tracheal side. Through this opening, which was of very small extent, a curved eyed probe, carrying a stout round ligature, was passed beneath the artery†, care being taken to exclude the nerve. The probe being cut away, the ligatures were drawn apart from each other, the lower being tied at the lowermost point of the denudation of the artery, the upper at the highest. They were about one fourth of an inch distant; and whilst they were tightened, the division of the internal coat of the vessel could be distinctly felt. The lips of the wound were lightly brought together by adhesive straps, and the ligatures drawn out opposite to the point of their application on the artery.

The patient, before she quitted the table, observed that the pain was numbed, and that the noise in her head had entirely ceased. The small tumor over the angle of the eye was still thrilling, but very obscurely. Two hours after removal to her bed, I found her free from pain, but uneasy from having pre-

* See a case of Carotid Aneurism, &c. by Astley Cooper, Esq. Medico Chirurg. Trans. vol. i.

† The pulsation of the lower tumor immediately ceased upon compressing the vessel with the finger as it lay over the probe.

served the same posture. She was fatigued, and anxious to procure sleep.

Eight o'clock, P. M.—Patient has been distressed with nausea; dozed frequently, but was as frequently disturbed by nervous startings, and ramblings about her husband and children; complains of severe pain darting from temple to temple, and soreness of her back and loins; pulse 90, and rather hard; skin cool, slight thirst. The lower tumor, I was concerned to find, had already acquired the thrilling motion of the upper. She was ordered the saline effervescing draught every third hour.

Second day, eight o'clock, A. M.—Restless all night, and continually changing posture. From two to four o'clock particularly uneasy: she even attempted to get up and dress herself; appears now pretty comfortable, having had a short refreshing sleep. Pain in the back very severe; that in the head confined to the forehead, and somewhat abated in violence; pulse 124 and hard; tongue lightly furred; some thirst.

Two o'clock, P. M.—Restlessness and other symptoms continue; pulse 132.

Eight o'clock, P. M.—Says she is much better; free from pain in the head, and has less in the loins; pulse as before; tongue moist; skin cool; has enjoyed some short but refreshing sleep; complains of stiffness in the throat and neck: mind tranquil.

Third day, ten o'clock, A. M.—Has passed a pretty quiet night; slept soundly at intervals; pain in her back has ceased. Much agitated by the firing of the tower guns, and has since had a very severe pain in the top and back of the head; pulse 112, fuller, and sensibly softer. The tingling or thrilling sensation is experienced in both tumors upon light contact of the finger; if firmly compressed, a pulse may be perceived in the lower.

Ten o'clock, P. M.—An enema has been administered without effect; has been troubled with colicky pain in the abdomen, and having had no evacuation, was ordered a purgative saline draught.

Fourth day, nine o'clock, A. M.—No sleep till three o'clock, owing to the pain in her head; pain now less severe. Had a co-

pious evacuation from the bowels at seven o'clock, and the catamenia as expected.

Four o'clock, P. M.—Complains of heavy pain in the occiput; no other symptom of commotion in the system; pulse 92 and soft; sits half erect; has eaten some light pudding with appetite.

Fifth day, ten o'clock, A. M.—Has passed an uneasy night from continued pain in the top and back of the head. She complains that though the pain is deeper seated, it renders the scalp tender. The tumors are very considerably diminished, and the eye less prominent. When she first sat up, her head was so light that she was immediately compelled to resume the recumbent position. She still experiences so much of the same feeling as to require support. I observed that the globe of the eye communicated a slight pulsation. Her sight is short, and objects appear to her larger than natural, and misty*.

Four o'clock, P. M.—Is comfortable in every respect, having slept for some hours together; pain in the head has ceased; pulse 84 and natural. Can preserve the sitting posture longer without support.

Sixth day, noon.—Ate a mackerel with appetite for dinner; continues free from pain. On removing the dressings, pus flowed out profusely by the side of the ligatures. Above and below them the wound has united by the first intention. Granulations and discharge healthy.

Seventh day, noon.—Slept perfectly undisturbed all night; was slightly affected to day by the ringing of bells, and finds any continued noise painful. I allowed her to eat meat. The thrill of the lower tumor is not perceived when the upper is compressed; but it has besides a feeble though distinct pulsation.

Eighth and ninth days.—Going on well in all respects. Granulations and discharge healthy.

First of June, tenth day. Has had a bad night and much restlessness, owing to a return of the pain in her head, which lasted for three hours and left the integuments sore. Has been up, and finds she can walk better than she expected. The

* In the misty vision preceding blindness from idiopathic affection of the retina, objects appear for the most part smaller than natural.

wound would heal immediately but for the ligatures; they are fast rising towards the surface, but are not yet loose.

Twelfth day.—Makes no complaint; sits up and works in her bed without fatigue; eats and sleeps well.

Fourteenth day.—Still has occasional pain in the summit and back of the head; but it is more tolerable than before the operation.

Seventeenth day.—Sat up to her tea last night, and sits in a room adjoining her chamber this morning; feels weak; fears her eye is more displaced; thinks the brow is pushed higher, and the lower tumour larger. Her husband and friends have expressed the same opinion. The ligatures continue to loosen daily. The left side of the neck is stiffened from the ear to the shoulder, which prevents the free motion of the head. The fibres of the platysma myoides feel rigid and corded, from the inflammation which the wound has excited. She has had shooting pains in the eye since the last report, but they subsided on leaving off a green silk shade, which she remembers to have produced the same effect before the operation.

Twenty-first day.—The upper ligature came away without force. The patient finds no inconvenience from sitting up and working all day. She was astonished to find that she could read small print and do fine work with her right (i. e. sound) eye, which she has been unable to do for years. The stiffness of the left side of the neck is decreased. She has been pressing, some days past, for permission to walk out.

Twenty-second day. The lower ligature had come away spontaneously, and was found in the dressings. From it hung the slough of the artery included between the threads.

From this day she was permitted to go out. On the twenty-third she walked two miles, by which, as might have been foreseen, she was greatly exhausted. On the twenty-ninth she returned to her family. The wound quickly healed. At the end of the fifth week she could perform all the duties of her situation as well as before the operation. She expressed herself well satisfied with the obvious diminution of the tumor, the decrease of the pulsation, and the total freedom she enjoyed from pain, which had distracted her for years.

20th September.—It is now four months since the operation was done. The tumours are evidently smaller, and their motion materially diminished. The eye is likewise less projecting. The cold dull pain, though formerly uninterrupted, is now but rarely felt. The artery of the left side may be distinguished very feebly beating below the angle of the jaw. The carotid of the opposite side contracts with more than ordinary force. Mr. Brickenden, who has watched the disease from its commencement, and had observed its more than usual progress before the operation, considers it to have received a decided check from that period. The husband and friends of the patient, as well as herself, are of the same opinion. She suffers occasionally from irregular digestion, to which she has been long subject; but in other respects is as well, and endures as much labour with as little fatigue as formerly.

On Saturday, 28th of October, she miscarried, at the period of about ten weeks from conception. The hemorrhage was so considerable as to induce syncope, and leave her in a state of extreme debility. On the succeeding morning it was observed that the upper tumor was flattened, and the pulsation had altogether ceased. On the Monday ensuing she felt pain in the affected side of the head, and was feverish. In the course of a few hours the cellular substance in the region of the orbit was filled with a serous fluid precisely similar to that experienced in the commencement of the disease; the pain was abated, and the œdematous swelling and heat of the surface reduced by a cold lotion. She has now (November) no pain in her head; but owing to her extreme debility from loss of blood, is subject to occasional palpitation of the heart and giddiness. The upper tumor and the gathers of integument between the eyebrows have totally disappeared. The eye projects less; the lower tumor is inelastic and has no preternatural pulsation.

During the Christmas following she was afflicted by the loss of a child, before she had recovered the debility which her miscarriage had induced. She was then seized with faintings, accompanied with a loss of sense and motion, frequent retchings, and discharges of blood by the bowels. For nearly two months she was confined to her bed, and still remained in a state of lowness, from which her apothecary and friends had no expec-

tation of her recovery. In June following she went by my advice to visit some friends in the country, thirty miles distant from London, and remained there for two months. She returned in health, which she has ever since enjoyed uninterruptedly in a higher degree than for many years past.

May, 1811.—Mrs. Stoffell is looking florid andhealthy. Of the disease, a knob of the size of a large pea over the inner angle of the eye is the only vestige that remains; she is still occasionally subject to pain in her stomach, and other symptoms of dyspepsia, a complaint with which she has been troubled for the last fifteen years.

Having never seen a parallel case to that which I have related, I am unable to add information on the nature of this rare but formidable species of tumor.

I have thought the case worthy of detail on two accounts; first, because it furnishes a second conclusive example of the safety of an operation, which has been commonly regarded as impracticable or injurious to the functions of the sensorium; secondly, because it determines the influence which, by the ligature of the carotid trunk, we possess over the diseased condition of its branches. It appears that, like every other trunk of the arterial system, the carotid may be obstructed without injury to the organ which it supplies; or in other words that the collaterals will convey a quantity of blood sufficient for its nourishment and functions.

The circulus arteriosus formed by the communion of the basilar and carotid arteries at the basis of the brain, seems to be the resource which nature has provided for the preservation of the cerebral circulation under this emergency.

It has been supposed that by the obstruction of one of the carotid arteries, the volume of blood supplying the brain was permanently diminished. The reason for this opinion was suggested by the passage of the carotids and vertebrals through bony canals, which would prevent an augmentation of their capacity. It might be further supposed that the intention of nature in this peculiarity of structure was to prevent the deleterious effect of the pressure which would result from dilatation of the vessels in an organ so delicate. But can it be imagined that

the functions of such an organ should be unaffected by the permanent privation of one fourth part of its circulating blood? Besides, if the volume of blood be not increased by diversion into other channels, how should the pressure be increased? The mere change of place could be of no importance, because at whatever point pressure was applied, it would be equally diffused over the mass, as is proved by the symptoms following the depression of a portion of fractured bone of the diameter of a shilling.

Nor can the fact of diminished volume be determined from the inclosure of the carotid and vertebral arteries in bony canals; but let it be granted; the unobstructed carotid acts with increased force, and the increase of but a few beats in frequency would amply compensate for the loss of volume.

But it is superfluous to look beyond the obvious visible effect. The disease appeared essentially to consist in a preternatural impulse of the blood conveyed to it. By obstructing the direct channel this impulse was broken, the circulation became anastomotic, the blood which was before influent, was now refluent, it was supplied at second-hand, instead of directly from the heart. Is not this the *modus operandi* of the ligature in the cure of all aneurisms?

Case of Congenital Cataract; with some Observations on the Means of artificially Dilating the Pupil in the Operations of Extracting and Depressing the Cataract. By JOHN HENRY WISHART, Esq. *Fellow of the Royal College of Surgeons, Edinburgh.*

[From the Edinburgh Medical and Surgical Journal, for January, 1813.]

JAMES DRYSDALE, a boy about eight years of age, was brought to me from Kinross, on the first of October, with cataract in both eyes. The pupils contracted and dilated very readily; he was able to distinguish day from night; and if the hand or any opake body was held above and before his eyes, he immediately put his hand to it; but he was unable to see any object placed before him, or under his eyes. On dilating

the pupils by the application of the solution of the extract of hyoscyamus, the cataract of the left eye was observed to be of an uniform dusky gray colour; that of the right had a ground of the same colour, but several small angular spots were perceived in it of a bright white colour.

From the history of this case, which I received from Mr. Annan, surgeon at Kinross, it appeared very probable, that, if the boy was not absolutely born blind, he had lost his sight a few days after birth. It was very soon observed, that there was something remarkable about the child's eyes; it was likewise noticed, that the child did not close the eyelids, even when exposed to the bright light of the sun. The child was about four months old, when it was positively ascertained that he was blind. There was evidently a great deficiency in intellectual faculties; but it was difficult to decide, whether it was such as to prevent him gaining his bread, provided his sight was restored. His education had been totally neglected, and he spoke very indistinctly. He was very averse to allow his eyes to be touched, and expressed scarcely any anxiety for the restoration of his sight.

Under these circumstances, I resolved to try the effect of the operation for removing the cataracts, and it was performed on the 4th of October, assisted by Dr. Duncan, jun., Mr. Nasmyth, &c. Very great difficulty was met with in securing the patient. The pupils having been previously dilated by the solution of the hyoscyamus, and aware, from the appearances described, that I had a capsular cataract to operate on in the right eye, and a soft one in the left, I used a needle similar to that of Professor Scarpa, but with a smaller curvature at the point, and made very fine and slender. The lens in the left eye was found to be of a melicerous appearance, was readily broken down, and several of the opake flakes passed into the anterior chamber of the aqueous humour. The cataract of the right eye was purely capsular. On being pierced with the needle, there appeared as if a thin vapour had passed before the pupil; and when the more dense parts were separated as much as possible, the pupil became almost clear. The eyes were covered with a few folds of wet lint, and a pledget of linen, spread with

simple ointment, was applied over it, and secured with a single turn of a roller round the head, and he was put to bed.

5th.—Slept almost all the afternoon, and made no complaint, and has had a good night. Pulse 96; skin rather hot. The eyes were bathed with warm water: the lids adhered slightly. In the morning, while eating his breakfast, said he could see light. On attempting to open the eyes, he resisted so strongly that I thought it prudent to desist. The lint was removed, and the eyes were covered with a compress.

Hab. stat. pulv. jalap. gr. xii.

6th.—Powder operated well; skin cool, pulse natural. After bathing the eyelids with warm water they were opened. The pupil of the right eye is nearly clear, except a very small speck at the under part; the pupil of the left eye is full of opake fragments floating about. There is slight redness of the conjunctiva, and some ecchymosis at the place of the puncture of the needle.

7th.—The pupil of the right eye still continues clear: that of the left improving. Both eyes are very tender on exposure to light, but not painful. Last night fell a crying on being left in the room without a light.

8th.—Yesterday evening complained of headache. This morning both eyes were found to be inflamed, especially the right. They are rather more sensible to the light than before, but says they are not painful. He was ordered a repetition of the laxative, and to have the eyes bathed with a collyrium of a grain of the muriate of mercury in six ounces of water, with a drachm of the vinum opii, to be used a little warm.

9th.—Inflammation of both eyes much abated, and he opens them very readily to day. The pupil of the right eye is perfectly clear; that of the left is becoming clearer at the upper part. Cont. collyr.

13th.—Right eye nearly free from inflammation; the pupil of the left eye much clearer.

From this date the left eye gradually improved, and, by the 6th of November, when he was sent home, more than one half of the pupil was quite clear, and he saw tolerably well with it. Both eyes had lost, in a considerable degree, the rolling motion; but, from the mental defect already noticed, it was difficult to ascertain the exact state of his sight. How-

ever, he seemed highly delighted on being dressed in a new suit of clothes. It may be further mentioned, that his father is said to be in a state approaching to idiotism.

In speaking of the dilating the pupil, previous to the operation, I mentioned that I had used the solution of the extract of hyoscyamus, and not the belladonna, which is now so generally used in this country for that purpose. The singular property possessed by these narcotics has been long known on the Continent, and in this country was first used in the operation for cataract by the late Mr. Saunders. Van Swieten,* speaking of palsies brought on by exposure to the vapours of arsenic, mercury, &c. remarks, that there are other poisons which may produce the disease even externally applied, and relates the following case: "A lady of quality applied a little bit of a fresh leaf of that kind of nightshade which is commonly called *Belladonna*, to a small ulcer below her eye, which was suspected to be cancerous, and, in a night's time, the pupil of the eye lost all its motion, remaining quite dilated, even while the eye was exposed to a strong light; but the nightshade being removed, the motion of the pupil gradually returned." Ray† affirms that he saw this case, and that it did not happen accidentally: for three different times, on repeating the application of the nightshade, the same effect constantly followed. Galen‡ asserts, that he has frequently observed the same bad effect from the imprudent use of opium, mandrake and henbane, to relieve violent pains in the eye; and more modern authors mention cases of blindness, squinting, weakness of sight, produced by the application of stramonium, mandrake, aconite, cicuta, &c. A very remarkable case is related by Dr. Daries, in his inaugural dissertation De Atropa Belladonna.‖ In preparing some extract of this herb for Reimarus of Hamburgh, and bruising the recent plant with the flowers and fruit, a drop of the herb or of the succulent berry spirted into his right eye. He endeavoured to remove the slight irritation by rubbing his

* Commentaries on the Aphorisms of Boerhaave, vol. x. § 1060.

† Histor. Plantar. L. xiii. c. 23. p. 680.

‡ Method. Medendi, L. xii. c. 2.

‖ Sylloge selectorum opusculorum argumenti Med. Practici, collegit et edidit E. G. Baldinger, vol. ii. 8vo. Gottingæ, 1777.

eye. In three minutes, on the uneasiness going off, a slight dimness of sight was observed, which increased rapidly, and in a quarter of an hour complete blindness came on, without any pain, the other eye remaining sound. Being very much alarmed, he consulted Reimarus about his case, and after three weeks the sight was completely restored. But Reimarus's account of the case, and his inferences from it, will be more satisfactory. "Quod attinet ad oculum tuum, olim, inter conscindendam *Atropæ Belladonnæ* herbam, ita affectum, ut per aliquod tempus fere visu privaretur, probe memini. Deprehendi nempe iridem ejus oculi adeo resolutam et patentem, ut fere dimidiæ tantum lineæ latitudo ambitus superesset, ampla vero choroideæ nigrities transpareret. Jam, cum effectum similem ab ore assumta *Belladonna* observari nossem, non dubitavi, quod ipse tu quoque suspicatus fueras, externe applicatum venenum idem efficere posse et ab insperso inter parandum succo paralysin illam ortam, quam tamen duraturam haud esse speravi. Interius jam acetum quoddam concentratum assumpseras, in cujus usu pergendum esse ratus sum: suasi tantum, ut simul ad irritandos nervos exterius volatilis oleosi spiritus vapores oculo ægro admitterentur. Sive igitur sponte, seu his adjuvantibus medicamentis, factum est, ut sensim et visus oculo et contractio pupillæ redirent. Ego vero mecum reputans, istam *Belladonnæ* vim haud spernendo in chirurgia usui esse posse cogito. Nempe cum in excidenda lente crystallina, sicut pelluciditatem amiserit, haud leve impedimentum objiciat irritatio et contractio nimia pupillæ, adeo ut sæpe iris per educendam lentem laceretur; quidni succo *Belladonnæ*, paralysin illi innocuum per aliquod tempus inducimus? nec solum extractio lentis inde longe facilior obtineretur, sed et simul illud incommodi, ne oculus repentino lucis sensu læderetur."

As far as I have been able to learn, Reimarus was the first who proposed using the belladonna in the operation for extracting the cataract,* and in the *Memoires de la Societé Philomathique* for the year 1797, he mentions, that Dr. Grasmeyer of Hamburgh employed it with success; and I have been in-

* This proposal of Reimarus is also noticed in Dr. Underwood's Treatise on the Diseases of Children, vol. ii. p. 53.

formed by my friend Dr. Duncan, junior, that, in the year 1796, he was carried by Reimarus to see Dr. Grasmeyer operate on a case of cataract where the belladonna had been previously applied.

Hitherto I have chiefly noticed the use of the belladonna in dilating the pupil; I shall now relate various experiments made with the extract of hyoscyamus, as also a few comparative trials made with these two narcotics. Professor Himly of Göttingen* accidentally learnt the effect of the local application of the hyoscyamus, and recommended its use in the treatment of some diseases of the eye. After the application of a collyrium of a solution of the extract of hyoscyamus, he found the eye exactly in the same state as in a case of complete amaurosis, viz. the iris quite motionless, so far drawn back, that it formed a ring scarcely a line in breadth, with its inner edge turned a little backwards, so that its anterior surface was concave towards the central point; the pigmentum nigrum, at the bottom of the eye, had not its usual black colour, but a grayish appearance. The patient, notwithstanding, saw as well with this eye as before, except that there was something glimmering before it. Very soon after rubbing a little of the ol. cajeputi on the eyebrow, the pupil appeared beginning to contract, and the dilatation in a few hours was completely gone. That this effect follows in all cases he completely proved by various experiments. He uses a solution of a drachm of the extract in an ounce of water, of which he lets a few drops fall into the eye, and keeps it there a short time by bending the head backwards. It occasions no pain, and no perceptible redness. The paralysis of the pupil comes on in an hour and continues five or six hours. As the action of a small quantity of the extract applied topically is so powerful, and so entirely local that only the iris is affected, and not the retina at the same time, he is led to point out the uses which the practical oculist may derive from this fact.

1st. The application of this remedy in cataract affords a certain test whether it adheres to the iris or not. For, by using

* Ophthalmalogische Beobachtungen und Untersuchungen, St. I. Bremen, 1801.

the hyoscyamus we can make the examination with much greater accuracy, than by the former mode of opening and shutting the eye; because in the latter way we must examine quickly, and in a dull light, whereas, by using the hyoscyamus, we may do it with the greatest deliberation, and in the brightest light.

2dly. The application of this extract enables us to make the most accurate investigation of the nature of the cataract, as it may thus be examined to its utmost extent and in the clearest light. It also assists us in the diagnosis of the capsular and lenticular cataract, of the fluid and firm cataract. It also appeared to Professor Himly to be of service in a still more important point of the diagnosis. For experience has taught him, that the patient affected with cataract, seeing coloured points and bodies, does not always make the prognosis of the operation so serious as was formerly supposed: for this does not always arise from a defect of the retina, but sometimes from the nature of the opake lens. If these appearances arose from a particular refraction in the lens itself, then they would be diminished by the dilatation of the pupil, as the rays of light would be transmitted not only by the nucleus of the cataract, but also by its more transparent part: if, on the other hand, they proceeded from a disease of the retina, the dilatation of the pupil would not lessen them but rather increase their number, as more light would then be transmitted to the retina.

3dly. It proves a palliative remedy in common cataract, as, by its local application, we can produce that state of the iris most favourable for the vision of such patients in a greater degree, and in the bright light of day. But he is unable as yet to decide whether it may be applied so constantly, and so frequently repeated, as to make the dilatation of the pupil permanent, at least during the day, without being hurtful, as he has never used it so constantly. The iris might be for ever deprived of its contractile power, and a *mydriasis e consuetudine* produced, which would be very hurtful in the event of an operation for extraction being to be performed. On the other hand, in patients who could not bring themselves to have the operation performed, or in whom it was inadmissible, this paralysis of the pupil, by the continued use of the remedy,

would be very desirable. Farther, perhaps, from its constant use, its action might extend deeper in the eye, even to the retina, and thus not only a paralysis of the pupil, but even an amaurosis might arise; although this is not so likely to happen from the weaker hyoscyamus, as from the more violent remedies, the belladonna, laurocerasus, &c. But if we should not wish to employ the hyoscyamus so often as to keep the pupil constantly dilated, or if, from its repeated application, we were afraid of an incipient paralysis, there may be situations in the case of blind persons, in which it would be of very great importance to them to see clearly for a few hours, or even a few minutes.

4thly. This remedy procures vision in many cases of opacities of the cornea; as when the opacity is chiefly situated immediately before the pupil, and prevents the rays of light from falling on the retina, although the cornea is sound in other places. The hyoscyamus here forms an artificial pupil without an operation, by enlarging the pupil, and allowing the entrance of the rays of light at the side of the opacity.

5thly. In many cases the application of the hyoscyamus facilitates the operation for cataract; when, for instance, even after a sufficiently large incision, the cataract does not pass out, from the pupil being too much contracted, and remaining so, though the eye be left at perfect rest. In this case, however, he recommends the precaution of not operating during the greatest dilatation of the pupil, as there would be great danger of causing a prolapsus of the vitreous humour, as it would receive too little support from the iris. He therefore allows the greatest effect to be over, and operates when the pupil has already contracted, and the iris acquired a slight degree of motion. The application of the hyoscyamus will also prove beneficial, if we operate according to Beer's method,* as the cataract, passing out along with its capsule, requires greater yielding of the pupil; and if partial adhesions of the iris to the capsule are to be separated, the wider the pupil, the more safely can the necessary means be used for their separation;

* This mode is very accurately described in the Encyclopedia Britannica, article Surgery.

and likewise, if the capsule is opake, it can be more completely destroyed if the pupil be previously in a state of dilatation, and the danger of wounding the iris with the knife, in a case of a very flat cornea, would thereby probably be diminished.

6thly. The dilatation of the pupil by the hyoscyamus, would be of great use in Conradi's* method of effecting the absorption of the cataract by opening the capsule; as, in this case, the success depends entirely on the free access given for the aqueous humour to pass to the lens,—consequently, the capsule must not be opened merely in one small point, but a large incision must be made in it, which can be readily done if the pupil be previously dilated.

Lastly. The local application of the hyoscyamus is particularly useful in the contraction of the pupil, which is not accompanied by an adhesion of the iris to the capsule.

In calling this state of the iris a paralysis, Himly wishes to be understood to mean nothing further than that the stimulus of

* From the well known fact of the crystalline lens being often gradually absorbed, whether it be of a hard or soft consistence, if the capsule is opened, and the humours allowed to come into free contact with it, Conradi was led to propose the following simple operation. "A small lancet-shaped cataract needle is introduced through the cornea, exactly as the knife in extraction, only a very little farther distant from the iris. The point is passed through the pupil, and when the capsule is sufficiently opened, the needle is withdrawn from the eye, which is bound up loosely for two or three days, as in general, after that time, so slight a wound of the cornea is quite imperceptible, and then we wait for the absorption of the cataract. The needle does not require to be quite so long as Richter's cataract knife, and it should not be more than a line and a half, or two lines in breadth. Its thickness should be very small, merely to give the blade a sufficient degree of firmness; it must be sharp on both sides for nearly one half of its length." Conradi adds, "It is unnecessary to dwell on the evident advantages of this operation; it is much more easily performed than any other. From this very slight and trifling wound of the insensible cornea, no bad symptoms are to be dreaded, which partly occur during extraction and depression, partly follow after these operations. If, after eight or twelve weeks, the cataract is not absorbed, any other operation may be performed as easily as if this puncture had not been made. The patients have lost nothing but the time; and as they have in general been many years blind, it is not of much consequence, a few weeks, more or less, in order to make the trial of freeing them from their disease by a safe and easy method."—See Arnemann's Magazin für die Wundartzneiwissenschaft, 1 B. 1. St. Göttingen, 1797.

light is then incapable of exciting the usual motion, which it was enabled to produce only a short time before, and which is not prevented by adhesion to the capsule, or rather by morbid affections of the iris.

Soon after the publication of Professor Himly's observations, his work was translated into French; but, by a mistake of the translator, *hyoscyamus* was rendered *belladonna*, and in consequence of that error, various experiments were made in Paris with the latter substance. Dubois employed it in the clinical school on a patient who had a very small pupil. The lens passed out with the greatest ease, and he did not find Himly's caution necessary respecting the danger of a prolapsus of the vitreous humour. In this experiment, the pupil contracted immediately after the lens had passed out.

The late Professor Schmidt of Vienna made various experiments, both with the hyoscyamus and belladonna, externally and internally. He found that the dilatation of the pupil does not take place in every case, though he was unable, from the small number of his experiments, to decide in what cases it takes place, and from what cause this difference arises. The death of that eminent oculist has prevented the prosecution of these investigations; but I have been enabled to collect the following account of some of his experiments.

In the month of May, 1803, he operated on twenty-nine patients of both sexes, affected with cataract, in the general hospital at Vienna; on twenty eyes by extraction, and twenty-two by depression of the lens. Of these twenty-nine persons, twenty-six recovered their sight. Eight were selected as the subject of his experiments. In five he tried the application of the solution of the hyoscyamus four hours before the operation; in three he used the inspissated juice of the leaves of the belladonna as many hours before the operation. The phenomenon of the retraction of the iris, (dilatation of the pupil) occurred in all the eight patients, but the degree of the dilatation was different in each individual. The difference of age and sex had no influence on it.

Of these eight patients, he operated on three eyes with the couching-needle, through the sclerotic and choroid coats, and

six by extraction through the cornea. Of the three that were couched, in a woman the iris expanded completely during the puncturing with the needle, and the pupil assumed its smallest dimensions. Of the six operated on by extraction, the same phenomenon was observed in one woman and one man; and in two others, the expansion of the iris evidently took place, but was not complete. To one of these three, where the complete expansion of the iris came on during the incision of the cornea, the belladonna was applied. Of these nine cases, only one was attacked with iritis after extraction, and consequent closure of the pupil.

Of the twenty-two eyes operated on by extraction, there were only two where the cataract was followed by a slight effusion of the vitreous humour, and this only occurred in the eyes subjected to experiment. It ought also to be observed, that this protrusion of the vitreous humour occurred without any strong pressure having been applied to the eye-ball; that the cataract was purely lenticular, and there was no unusual adhesion of the capsule; and lastly, in both cases, the belladonna had been used. Professor Schmidt lastly remarks, that, in all the six patients, it appeared to him as if the cataract was more *unwilling* to come out, (if the expression may be allowed); and that he was convinced, that neither the size of the incision, nor of the opening of the capsule, nor any sort of adhesion, could have the most distant share in producing this circumstance.*

I have been induced to give very copious extracts from these works, on account of the difficulty of procuring them, and the importance of the information to the practical surgeon which they contain. Of late, I have generally used the solution of hyoscyamus in preference to the belladonna, as in some cases of acute inflammation of the eye the belladonna seemed to excite pain. In one case of cataract, I have occasionally used the hyoscyamus as a palliative cure for more than a twelvemonth, and have not observed any bad effects from its continued application. However beneficial the dilatation of the pupil may be in the operation of depression, or of breaking down the lens in

* See Ophthalmalogische Bibliothek von Himly und Schmidt, St. 11. B. 1. Jena, 1803.

congenital cataract, it does not appear to me that it would be equally so in the operation of extraction. For I have always found that the incision of the cornea was made with less risk of wounding the iris, when the pupil was contracted; and I have never met with any difficulty in getting out the cataract, by a gradual and continued pressure on the eye. The iris being expanded, would bring it immediately under the edge of the knife, and make it more apt to be wounded, or it might fall forward after the knife had cut itself out, an accident which happened in two cases where I operated, but was not attended with any bad consequence. In these two cases, I found the application of the hyoscyamus of great use in drawing the iris back into the eye from between the edges of the wound, which then healed, and both patients now enjoy very perfect vision. I have also used it in cases of protrusion of the iris through ulcers of the cornea, the iris retracting, and allowing the ulcer to cicatrize. I very lately also used it with singular advantage in the following case. A woman about forty came to me with the pupils of both eyes very much contracted, the iris adhering firmly to an opake substance behind; but the opening was so small as to make it impossible to ascertain the nature of the opacity. She had lost the sight of the left eye for nearly five years; and the vision of the right was much impaired. In both eyes the affection came on subsequent to violent rheumatic attacks in the head and neck. I conceived, that if the hyoscyamus was applied to the eye, and the adhesions separated, the pupil would dilate. Accordingly, I applied the solution an hour before, and then introduced the curved cataract needle, about two lines behind the cornea. As soon as the adhesions towards the inner angle of the eye were separated, the pupil sensibly dilated, and the point of the needle was seen more distinctly behind it, and was moved about with more freedom, in order to separate the rest of the adhesions. After the operation, the patient could distinguish the wall of the room.

I have always used the hyoscyamus dissolved in water, in the proportion of a drachm to the ounce. In Drysdale's case, I tried the extract merely softened with water, but did not find that it occasioned a greater dilatation than the solution.

The difficulty of procuring the belladonna, may also be mentioned as a reason for recommending the hyoscyamus. I lately applied to two of the principal apothecaries here, and could not get any of the recently prepared extract.

Edinburgh, November, 1812.

Case of Inguinal Aneurism Cured by tying the External Iliac Artery.

By William Goodlad, Surgeon.

[From the Edinburgh Medical and Surgical Journal, for January, 1812.]

In the beginning of June I was consulted by John Ramwell, a stout muscular man, of a spare habit of body, a florid complexion, and about 41 years of age. Upwards of three years ago, the patient first perceived a swelling not much larger than a pea, on the inside of the right thigh. It caused very little pain or inconvenience, and did not increase so as to alarm him, till after his recovery from a severe dysentery, nine months ago. From that period, its increase has been rapid. It is now of the size and shape of a pint bason, with its rim inverted; although six months ago it was not, by the patient's report, more than one fourth its present size. The tumor was situated at the superior and anterior part of the thigh, extending along Poupart's ligament, to within two inches of the anterior superior spine of the ilium, and about four inches down the thigh. It is dense, circumscribed, and appears to sink deep amongst the muscles. If grasped firmly, a dull pulsatory motion is clearly distinguishable. This pulsation is rendered more evident by bending the thigh upon the pelvis; and by a continuance of the pressure, the swelling becomes much less prominent. The artery passes along its most interior surface, and gives to the finger the peculiar thrill characteristic of aneurism. It retains this character, till it passes through the adductor femoris to descend into the ham, when it is no longer to be traced.

A Bread-baker by trade, the patient has been accustomed to occasional great exertion, in carrying loads of flour up several sets of stairs. But his employment, during the last seven years,

has been chiefly performed in a sitting position; and requires almost no exertion. When I apprised him of the necessity of an operation, I learnt that he had already consulted two surgeons, one of whom advised the removal of the tumor by extirpation; the other had recommended the frequent application of blisters to it. This diversity of opinion was attended with a proportionate want of confidence in my patient, who chose to defer it; and, as his pulse was good, his appetite tolerable, his bowels regular, his general health, in short, little impaired, I gave him general directions, and desired to see him again ere long.

At the end of a fortnight the swelling was much in the same state, though somewhat larger. It produced a numbness in the thigh, and the leg towards evening began to swell. A troublesome cough now came on, which, with a few days exertion, produced a more rapid increase. My friend and late master, Mr. Killer of Manchester, who, with my friend Mr. Hamilton, did me the favour to examine my patient, entirely coincided with me in opinion, and the operation was consented to when the cough was remedied. For this purpose opium with digitalis was administered, and rest, low diet, and occasional laxative medicines recommended.

From this period to the latter end of July, the tumor increased so rapidly, that it was thought adviseable to delay the operation no longer, though some cough still remained, and though the temperature of the atmosphere was oppressive. Accordingly, it was performed on Tuesday the 29th of July, in the presence of Messrs. Killer and Hamilton, whose very friendly attention on this and every other occasion I have great pleasure in being able to acknowledge.

An incision, upwards of three inches in length, was made through the integuments, beginning at the upper margin of the tumor, about three inches from the symphysis of the pubes, and carried almost directly upwards. In the dissection of the cellular membrane, covering the aponeurosis of the external oblique muscle, several arteries were divided, which supply the adjacent glands. These vessels were immediately secured, and more than two inches of the tendinous expansion exposed. its fibres were carefully divided and dilated downwards, by the

probe-pointed bistoury induced upon the finger. The artery was now clearly distinguished by its pulsation. The fibres of the external oblique, with the margin of the internal and of the transversalis muscles, were also divided upwards, to allow sufficient space for the two fore-fingers of the left hand to be placed in contact with the arterial sheath.

I endeavoured to detach the fascia, so as to be enabled to pass my finger round the artery. In this attempt considerable difficulty was experienced. But, by keeping the artery firmly in its situation upon the psoas muscle, with my finger and thumb in contact with it, I succeeded in passing the eyed end of a probe (about half an inch of which was bent to a right angle) under the artery, from within outwards. The shaft of the probe was gradually bent likewise to facilitate its turning in the wound. A double ligature being put through the eye, the probe was redrawn. The upper ligature was tied as high as possible by Mr. Killer. The pulsation in the tumor immediately ceased. The lower ligature was also tied, but as the space between the ligatures did not appear to warrant the division of the vessel, it was left entire. The integuments brought into contact, were secured by a couple of stitches, stripes of adhesive plaster were applied, and a roller passed round the whole. The patient was put to bed with the thigh bent upon the pelvis. The temperature of the limb had been kept up during the operation, by a flannel roller applied around it. This was still retained; the whole limb felt comfortably warm, and he had little pain. At nine o'clock in the evening, I found his skin cool, tongue somewhat furred, pulse 100, wound easy. The leg and thigh quite as warm as on the opposite side, foot a little colder. He has had a few short slumbers, and has taken bread, milk and tea. To take an opiate at bed time.

Wednesday, 7. A. M.—He complains of much pain in the back, occasioned by continuing in the same position, which prevented him from sleeping. He was therefore turned on his back, and the knee bent and supported by pillows, as in fracture of the thigh. He has occasional throbbing, some thirst, pulse 90, skin cool. The leg and thigh quite as warm as the other, the toes nearly so. To take lemonade for his common drink. One P. M.—He has had an hour's sleep; cough somewhat

troublesome; pulse 100; tongue furred in the middle; a little soreness in the belly. A gentle laxative was given.

At nine o'clock P. M. the limb was hotter than the healthy one; pulse 104, and fuller. He has had considerable pain in the head, which continued till seven o'clock, when he had an hour's refreshing sleep, and awoke better. The pain in his back continues troublesome. He has coughed little, and expectorates freely. No pain, or tension, in the abdomen; tongue moist, though furred; urine hot, but not high-coloured; no stool.

℞ Sulph. magnes. ʒiij.
Vin. antim. gtt. x.
Tinct. sennæ, ʒij.
Aq. puræ, ʒi. M.

To be taken immediately, with a saline draught every four hours.

The heat of the atmosphere has been quite oppressive.

Morning visit, (second day.)—He passed the night with only an hour's sleep; he complains much of his back, and a slight headache; face flushed; his skin hot and dry; pulse 116, rather hard; no tension in the abdomen; cough troublesome in the night; water high-coloured, and scanty; no stool. To six drams of infusion of sennæ, and a dram of the sulphate of magnesia, half an ounce of the liquor of acetite of ammonia and ten drops of antimonial wine were added. To be taken every three hours until the bowels were opened.

Noon visit.—He had a motion soon after I left him in the morning, and several hours comfortable sleep in the afternoon. Pulse 102, soft; skin cool; less thirst; back easier; cough still continues. The whole limb is comfortably warm; he has perfect sensation and power of motion in the toes; belly quite easy. To continue his medicines till he has another stool.

He had some return of fever towards evening, but, as it subsided, he had two hours sleep, and was much refreshed. Pulse 108; head easy; tongue moist and clean; skin cooler; urine hot and high-coloured. He has had another stool, and has taken plentifully of pottage, butter-milk and tea. To a dose of his purgative medicine were added twenty drops of laudanum, to be taken at bed time.

Friday, August 1st, (the third day after the operation.)—The dressings are removed for the first time. The inferior half of the wound is a mere line, the superior half nearly so. There is a slight blush upon the edges, but no pain or tenderness; discharge moderate and healthy; tongue clean and moist; limb warm and sensible; appetite good; had a stool this morning.

Saturday.—He has slept well the two last nights, and has taken broth, pottage and milk; pulse 84; tongue clean; no thirst; bowels regular; limb comfortable. The wound is somewhat separated above the upper ligature; discharge copious but quite puriform. The opiate to be repeated.

Sunday, (the fifth day).—The wound continues to look well; discharge copious; the ligatures from the small vessels which were divided in the operation have come away; the stitches, beginning to ulcerate, were removed also; limb warm and easy.

Monday, (sixth day).—Much as yesterday, except that his cough was troublesome in the night. He has also been much fluttered by a sudden noise at the door, but is now calm; the wound looks well, though a slough lines the opening round the upper ligature; discharge somewhat increased, but of a proper quality; pulse 82; appetite good. To take animal food once a-day, and a pint of porter in the twenty-four hours.

Tuesday.—A week has elaped since the operation; he continues to go on well; his general health is good; bowels regular; pus healthy; the lower half of the wound continues united by adhesion, except where the stitches were inserted. The upper half of the wound is not more than $\frac{1}{4}$ of an inch in breadth; granulations healthy. The slough surrounding the upper ligature is in part removed, and little pain is complained of, though considerable pressure be applied to the parietes of the abdomen.

Wednesday.—The patient has been taking, night and morning, during the three last days, pills containing half a grain each of opium, digitalis, and calomel, and three grains of rhubarb; his cough is now better, he sleeps well, and had a stool this morning; pulse 86; appetite good; discharge yet considerable, but healthy.

Friday.—The slough lining the aperture which I have before mentioned, is come away; discharge yet copious; has a stool daily; no pain; limb comfortable; pulse 84, directly after dinner.

Sunday.—Continues to improve; discharge not so copious.

Monday.—Much as yesterday; discharge greatly abated; granulations now closely surround the upper ligature; the lower ligature has created little irritation; the wound is united around it; the pulse during the last three days has ranged from 74 to 80; tongue clean; bowels regular; limb easy.

Tuesday, (the fourteenth day).—The skin over the aneurismal tumor can be drawn up nearly two inches, though before the operation it was quite tense; its contents are fluid; the wound heals.

Tuesday.—The ligatures came away yesterday; the patient is allowed to set up in bed, and to move the limb occasionally; appetite continues good; his bowels regular.

It will not be necessary to transcribe further the daily progress which the patient made towards recovery. At the end of three weeks, the wound was little larger than a pea; the discharge was trifling. He was now allowed to get out of bed, and walk about the room; though very weak, there was no perceptible difference in the strength or feeling of the limbs. The numbness in the thigh, which had become troublesome before the operation, still continues. The tumor decreased rapidly, particularly towards the spine of the ilium. At the end of a month, the swelling has decreased at least one-third; the wound is perfectly healed, and the patient increases in strength daily; he is now able to take considerable exercise, having walked nearly two miles in one day; the limbs are of an equal strength and thickness, and the numbness in the thigh quite removed.

I much regretted that, in this operation, I could not adopt Mr. Abernethy's improved method of tying the artery, to its full extent, since I could not separate the vessel from its connection, sufficiently to admit of its division, without a degree of violence, which would have more than counterbalanced the danger of a short space of the tube (between the ligatures) being left separated from the surrounding parts; yet I am decidedly of opinion, that the chance of success from the operation was diminished by this occurrence. I would, however, in every case, apply a double ligature upon the vessel, since the same process which prevents the accession of hæmorrhage by the application of the upper ligature would appear likely to hinder such an oc-

currence from the lower orifice also; and by producing adhesion of the coats of the vessel at two distinct points, you render the ulcerative process less extensive, and confine it, in all likelihood, entirely to the space between them.

The tumor, at the period of the operation, extended from the anterior superior spine of the ilium, to a short distance from the angle of the pubis; and its apex rose so high, that it rendered Poupart's ligament exceedingly obscure in this space. This rapid extension made me apprehensive that its basis would extend so far under the crural arch, that a sound part of the artery could not be reached without considerable difficulty. This circumstance appears the more likely to take place, when we consider the powerful resistance which the fascia of the thigh presents to the increase of the tumor beneath it, and the comparative facility for its ascent upwards, where it meets with resistance chiefly from the fascia iliaca of Mr. Cooper. That the proper sheath of the femoral vessels, in its natural state, can contribute little to prevent such an event, will be easily conceived, particularly if we agree with the same skilful surgeon, that all crural herniæ are protruded, in the first place, into this sheath, and that the openings for the passage of the lymphatic vessels are large enough to allow their exit from it.

This event took place in Mr. Abernethy's second case; and that it does not more frequently occur, is owing to that law which Mr. Hunter first noticed, by which extraneous bodies approach towards the surface, rather than in a lateral direction, and by the pressure of the projected fluid producing condensation of the parts around it.

The probability of the aneurismal sac participating in the irritation which the presence of the ligatures may produce, will be in proportion to their contiguity. Mr. Abernethy, therefore, very judiciously directs, that the artery be tied as high as possible, though the difficulty of reaching it is thereby increased, and though in such cases the surgeon must lay aside the knife, as soon as he is able to reach the arterial sheath, and conduct the future steps of the operation by the finger, or by a blunt instrument introduced under the artery.

As the ulceration of the aneurismal sac would, in any case, produce so much constitutional irritation, as would render this

operation doubly hazardous, (and from the large size which it attained in Barnwell's case, almost certainly fatal,) it cannot, I think, be too strongly recommended to proceed to the operation at as early a period as possible; that is, as soon as the flow of blood through its natural channel, and the consequent increase of the collateral branches, appears adequate to the support of vitality in the limb.

It is pleasing to reflect, (because it shows the favourable progress of this branch of surgery), that though Cheselden trusted so little to this power, that he had difficulty in believing the event when it had taken place in the arm, the judicious boldness of Mr. Abernethy has clearly demonstrated, that the operation may be performed with safety in any situation, where anatomy enables us to reach a healthy portion of the artery.

That the supply of blood was adequate to the proper nutriment of the limb, was in this case evident from the day of the operation; although the artery passed too near the surface of the tumor, and its pulsation downwards was too easily traced to admit a supposition that the circulation, though it, was much impeded. The absence of extensive œdema confirms this opinion, and is easily accounted for, by the sac being almost entirely external to the femoral vein.

The secondary fever was much less than could have been expected, especially as the temperature of the air in the four or five first days after the operation amounted to 70° in the shade.

Bury, Lancashire, Sept. 20th, 1811.

P. S.—Since this operation I have heard of a similar case in this neighbourhood: the patient was allowed to die without any effort to save him by an operation.

A Case of an Ununited Fracture of the Thigh, cured by sawing off the Ends of the Bone. By Griffith Rowlands, *Member of the Royal College of Surgeons, London, Senior Surgeon to the General Infirmary, and Surgeon to the Lying-in Charity, Chester.*

[From the Medico-Chirurgical Transactions, Vol. II.]

John Thomas, aged 53, a tall strong man, was knocked down by the falling of a tree, which broke his thigh nearly in its middle. A bone-setter in the neighbourhood was called to his assistance, who bound up the limb and continued attending him *many weeks*. The poor man having lain in bed for a longer period than was considered necessary by his friends, in such cases, took the opinion of a regular practitioner, who undeceived him as to his prospect of recovering, and advised him to place himself under my care.

The patient being rather unwilling and very unequal to undertake a journey of forty miles to Chester, contented himself with wearing a strong leathern case round his thigh, which enabled him, with crutches, to move from one room to another. However, being at length completely wearied with his inactive life, and his little farm greatly wanting his attendance, he was brought in a cart and admitted into the infirmary on the 28th of October, 1806, five months after the accident. The thigh at this time was considerably wasted, four inches shorter, and the fractured ends of the bone so far separated, with a fleshy substance between them, as to make it impossible to bring them together.

He was a man possessed of an excellent understanding and firm resolution. I stated to him that there was a chance of curing him, by sawing off the ends of the bones; but, in attempting to do so, I might unavoidably cut an artery, that would make it necessary to take off his thigh to save his life. He submitted readily to the experiment, requesting, if he could not be otherwise relieved, that the limb might be taken off. The patient being ordered for some days to live on the milk diet, and his bowels being properly attended to, the operation was performed, on the 12th of November, in the following manner.

A tourniquet being applied, but not tightened, I began an incision three inches and a half above the fracture, and continued it between the rectus and vastus externus muscles, to the same length below it. A few strokes of the scalpel laid the bone bare, and the *upper* portion was easily separated from its connection with the surrounding parts. The end of the *lower* portion of bone was buried much deeper amongst the muscles, and a firmer adhesion had taken place; and I was obliged to proceed very slowly and cautiously in this part of the operation, on account of the extreme difficulty of avoiding an artery, which beat strongly against my finger as I directed the scalpel. Having thus far succeeded to my wishes, I passed a strong plate of tin behind the denuded ends of the bone, and being provided with every kind of saw likely to succeed in such a case, I judged the business would be easily finished. In this I was disappointed; for after some disturbance to the patient and much fatigue to myself, I found it necessary to make an incision across a great part of the vastus muscle, by which means I was enabled, with a common amputating saw, very easily to take off the ends of the bones. The upper portion being first removed, I had an extension made on the limb, by which I ascertained that two inches of the lower portion was to come off. There not being a single artery to tie, the lips of the longitudinal wound were brought together with strips of adhesive plaster, and the lateral incision somewhat approximated by the same means, but left sufficiently open to afford an easy vent to the discharge from the inside of the wound. Pledgets of cerate on lint and tow were next applied, with compresses of soft linen retained with a tailed bandage. A long sort of strong splint, reaching from the buttock to the foot, with a joint at the knee, to vary the posture, supported the limb underneath, and a common wood splint on each side, and one on the top of the thigh, made the whole secure. In this state the patient was laid in bed on his back, and by the aid of an opiate passed an easy night.

It would be needless and tiresome to enumerate the different remedies employed in this case, which the particular symptoms required. The wound was dressed on the 16th, and looked well, the bones being perfectly opposite.

The discharge was considerable, and continued so for many weeks; during which time, I found the lateral incision of great importance, as a convenient drain to the discharge, and I recommend it to be adopted in all similar cases. The wound was completely healed in three months; but the reunion of the bone was weak for a long time. On the fourteenth of April, 1807, he returned home, and soon was able, with a stick and a high heeled shoe, to follow his usual occupation.

He died of a fever about a year ago.

Though I have several times performed all the principal operations that occur in surgery, and very often many of them, I confess this far surpassed any thing I had ever undertaken or witnessed, and I am doubtful as to the propriety of recommending it to be done by others.

History of Three Persons who were nearly Suffocated, and of One who Perished, from the irrespirable Gases arising from a Coal Fire. By DAVID KING, M. D.

[From the Edinburgh Medical and Surgical Journal, for April 1811.]

ON Tuesday, 13th November last, a fire was kindled in the hold of a vessel lying in this harbour, in order to dry some wet sails, and to make it more comfortable for the people that were doing some work there. In the evening the fire was perfectly extinguished, and the captain gave strict orders for the hatches to be left off, till about the time the crew should go to bed. His injunctions, however, had unfortunately not been attended to; the hatches were put on, and the vessel was shut up till eleven at night, when the crew got into their usual births. The mate slept in the cabin, and two boys, M'Ilraith and M'Dillon, and an elderly man, Thomas Leslie, slept in the forecastle; both of which stations are separated from the hold only by a partition of wood. None of the people felt any thing disagreeable; and on that account they shut up closely both the cabin and forecastle. Leslie slept in the same birth with M'Dillon, who unfortunately perished, the former at the fore and the latter at the back

part of the bed; and the other boy, M'Ilraith, lay in a bed by himself.

The captain was surprised to find, when he came on board, about half past seven the following morning, the crew all in their births, and the vessel shut up. He went to the mate, to inquire of him the cause. The mate, who was very listless, told him that it was not drunkenness; but he could not account for the great debility and pain he had in the small of his back, and in his lower extremities, and begged the captain would allow him to remain in bed a little longer. The captain suspecting, notwithstanding the mate's assurances to the contrary, that it might be the effects of drunkenness, gave his consent. He then went down to the forecastle, and there he found M'Ilraith lying upon the floor, who uttered a peculiar kind of cry upon touching him, and the other two in their births. He, however, did not at all examine them minutely, but found them unable to speak, and, as he supposed, dead drunk. The captain related the conduct of his crew to some seafaring people on the quay, and prevailed upon them also to go down, who all considered the crew in a fit of intoxication; and they thought, therefore, the best plan was to allow them to sleep it out.

Accordingly, they were left from that time till half past one o'clock P. M., when the captain suspecting something very remarkable in their drunkenness, from their being all in a similar state, and none of them getting any better, thought it prudent to have them brought on deck.

But it was now too late; for in one, M'Dillon, the vital spark was gone, and his bed-fellow, Leslie, was nearly lifeless. The boy, M'Ilraith, was scarcely able to utter a strange cry, and the mate, who was in the cabin, to be made sensible of his situation.

The whole were removed to a house a few paces from the quay, and in a few minutes I saw them.

M'Dillon had great suffusion of the face, neck, and upper extremities, which were tumid, and pitted on pressure. The eyes were turgid, but retained nearly their lustre; the lips were black, and the teeth of the lower jaw immovably clenched against those of the upper. The extremities were cold and rigid; the fingers and toes were curved inwards, as in severe epileptic fits;

the nostrils seemed dilated, and drawn a little upwards, and were filled with a thin bloody froth.

The windows and doors of the room were thrown open; the lungs were repeatedly dilated, by means of a quill put into one nostril, whilst the other and the mouth were shut, and pressure was made upon the larynx, to prevent, during the inflation, any air from getting down the œsophagus. By this artificial respiration, a great quantity of a mucous froth came from the nostrils. A vein was opened, but no blood came. Frictions, and the application of warm irons and flannels were also had recourse to; but every attempt to restore animation proved fruitless.

Thomas Leslie had also considerable suffusion of face; his eyelids and mouth were closely shut, and his breathing, which was interrupted with sobs, had a peculiar rattling noise. His pulse was small, and about 96; his toes and fingers curved, his joints all inflexible, and his extremities somewhat cold.

Cold water was dashed upon his face, and hartshorn rubbed about his mouth and nostrils, and volatile salts were occasionally applied to his nose; all of which caused him, after a little, to corrugate his face, and to make fuller inspirations. Warm irons and flannels were applied to his lower extremities, and an enema, composed of $1\frac{1}{2}$ drachms of hartshorn, in about $1\frac{1}{2}$ gills of warm water, was administered with considerable difficulty, from the contraction of the sphincter ani, and the rigid state of the thighs. About eight ounces of blood were taken, without any apparent effect on the pulse. His mouth was forced a little open with the end of a spoon, and a little warm wine and water given, but was swallowed with considerable difficulty. As soon as the warm bath was gotten ready, which was in half an hour, he was immersed in it, with the head a little raised, for about ten minutes, when his pulse became fuller and stronger, and his joints more flexible. He seemed, however, insensible to every thing but to the volatile salt, when applied to his nostrils, or to cold water thrown upon the face, both of which were occasionally employed. In the evening, I found his pulse was rather fuller, and 84, his respiration less noisy, and his limbs more flexible. A stimulant enema, of senna and sulph. magnesiæ was administered, by which one stool was produced, involuntarily discharged. A common enema was administered in three hours after-

wards, which procured one scanty stool, also involuntary. The report which the attendants gave next morning, 15th, was, that they had gotten him to swallow some wine and water, and soup occasionally, but that he was apparently insensible to every thing that was going on about him; that he never once attempted to open his eyes, and that he was frequently bedewed with a warm sweat, which was general over the body. As he now swallowed with considerable ease, an infusion of senna was given him at intervals, which not operating in six hours, a bolus of jalap and calomel was ordered. In about three hours after, he had two or three plentiful stools, which were involuntarily discharged. About ten o'clock at night, his breathing became very laboured, in consequence of which I was sent for. I perceived his features were now much shrunk, his mouth was very open, pulse 120, and weaker, respiration hurried, and he lay perfectly extended on his back. There was no coldness of his extremities, which might have been accounted for from their being constantly surrounded with warm irons and flannels. Sinapisms were applied to the inside of his thighs, and cloths, soaked in vinegar and water, to his head. In less than an hour he began to draw up his limbs, and appeared to feel some uneasiness from the sinapisms, which were taken off, and applied at intervals only. During the night he took some bread-berry, and towards the morning of 16th, he understood what was said to him, and, for the first time, raised one of his eyelids; but had no recollection of what had passed from the time he went to bed on 13th. His bladder was very much distended with urine, but he was unable to get any passed, though he had made several unsuccessful attempts, and had rendered several liquid stools. A catheter was introduced into his bladder, $5\frac{1}{2}$ lbs. of urine, of its natural appearance, were drawn off, which gave him great relief. This operation had to be repeated for three or four days afterwards; and as his stools, though frequent, were black, and accompanied with tenesmus, he was frequently purged, and immersed in the warm bath at night.

——— M'Ilraith, who was in another apartment of the house, was blooded soon after he was brought out of the vessel. I saw him soon after the bleeding, which had been to the extent of 12 or 14 ounces, and his pulse was then scarcely to be felt. He

looked wildly around him, raised himself frequently, as if he had some difficulty of breathing in the horizontal posture. He refused every thing that was offered him to swallow, and spoke incoherently. He was immediately put into the warm bath, and was kept immersed for ten minutes, when his pulse became fuller and stronger, and he now swallowed a little wine and water. In an hour or two afterwards, he had a bolus of jalap and calomel, which operated fully in three hours after it had been swallowed, when he found himself very easy, and his skin assumed its natural appearance. I did not see him after this; but I understood he had a slight discharge of blood by stool, for a few subsequent days.

The mate also lost a few ounces of blood, which he bore perfectly well. He had a bolus of jalap and calomel, from the operation of which he found much relief. He was able next day to walk about, but felt weak, had slight head-aches, a moderate diarrhœa, and a trifling discharge of blood from his nose and lungs occasionally, for the two or three following days.

In the above cases, I think we have examples, where the noxious gases arising from combustible matter, have entered the lungs, and have been taken into the course of circulation.

We must suppose this from the length of time during which the people were exposed, and from these gases being in no considerable quantity, only gradually penetrating through the seams of the partitions, which separated the cabin and forecastle from the hold, where the fire had been burning, and the wet set to dry.

The most prominent external appearances in them were, the great lividity of the surface, the inflexible condition of the extremities, the fingers and toes curved, the mouth shut, the nostrils dilated, and the great debility of the animal functions. It is impossible to say, from the three cases of the persons who were sleeping in the forecastle, whether the young or the old, the weak or the robust, resist the deleterious effects of these gases longest. For M'Dillon, aged 17, healthy and robust, lay at the back part of the birth, which was enclosed on all sides, except at the fore-port, with boards, where Leslie, aged 53, lay. The latter would inhale the gases much diluted, whilst the former must have received them more concentrated. M'Ilraith, aged

11, recollected his getting up, sometime during the night, to take a drink of water, but was unable to speak, or get up the ladder, or even back into his bed, and had lain therefore on the floor till the morning, when he was lifted into his birth. In an hour or two after, he had been taken out of bed by his mother, who washed his hands and face with cold water; and, little suspecting the real cause of her son's illness, had again put him into his bed. The mate, aged 32, lay in a more roomy apartment, the cabin, where the pure air would get access by the funnel for the chimney, and where the gases must even have been less in quantity, from the partition which separated it from the hold being stronger and more complete.

I am extremely sorry that I was denied permission to open the cranium and thorax of the body of M'Dillon, by which the true state of the brain and lungs could have been ascertained.

I have omitted to say, that the above persons were more than once visited by Dr. Patterson and Mr. Whiteside of this town, with whose approbation I followed the treatment I have just related.

Ayr, Sandgate, 10th Dec. 1810.

SELECTED REVIEWS.

Dissertatio Inauguralis de Effectibus Arsenici in Varios Organismos, necnon de indiciis quibusdam veneficii ab Arsenico illati; Quam præside, C. F. Kielmayer publice defendet, Jan. 1808. Auctor GEORG. FRIED. JAEGER, Stuttgardianus, 78 p. 8vo. Tubingæ.

[From the Edinburgh Medical and Surgical Journal, for January, 1811.]

WE have not seen the original of this inaugural dissertation; but a very full analysis of it has been inserted in Gehlen's Chemical and Physical Journal, by Dr. Siegwart, which contains several original observations, worthy of being generally known.

Dr. Jaeger has examined the effects of arsenic on all classes of living organized bodies, vegetable and animal, and had an opportunity of observing its effects upon a girl twelve years of age, who was poisoned by drinking water which had stood upon the black oxide of arsenic (*cobaltum officinarum*).

Most of his experiments were made with a solution of white oxide of arsenic in water, in the proportion of one to sixteen, or with a solution of arsenic acid, in the proportion of one to four. The latter, diluted with water, operated upon all organic bodies in the same manner as the former, but more quickly and obviously.

The general conclusions which he has drawn from his experiments on the vegetable kingdom are, that arsenic is a general and pretty quick poison for plants at every period of their life, with the exception, perhaps, of a few of the simplest forms of vegetable existence; that their death was induced by means of the gradual absorption and distribution of the poison by the vessels and cellular membrane, so that the parts died in succession, as the particles of the poison reached them; that the changes which took place in the poisoned plants, were the consequence of the chemical action of the poison, and that the irritability (of the mimosa) seemed to be exhausted before general death destroyed the whole machine.

The author found arsenic also to be a quick and destructive poison to animals, when applied in sufficient doses, and to a proper organ. The death was preceded, in every instance, from the infusory animalculæ up to man, by inordinate motions, and the secretion of lymph was increased most remarkably from the mucous membranes. Frequent fluid stools took place in all classes of animals; in those in which mucus is secreted on the surface, it was remarkably increased, and crabs ejected a great deal of froth from the bronchial openings. The power of voluntary motion and susceptibility for external stimuli decreased, as well as for the stimulus of galvanism, after death; the respiration of those animals which breathe by lungs, became difficult and laborious, and warm-blooded animals experienced extraordinary thirst. In birds and mammalia, frequent and violent vomiting took place, and commonly was the commencement of the scene to which convulsions put an end. Rabbits, however, which ruminate, did not vomit. In other respects, our author did not discover any difference either in the mammalia or birds, between those which lived on animal or on vegetable food. Dogs and cats gave the first indication of their uneasiness, by a change in their voice; but the girl already mentioned made no complaint of pain, not even when she was asked about it. She retained her senses to the last, knew the persons around her, and inquired for what she wanted.

Arsenic exerted the most powerful effects, when it was injected into the veins, or applied to a bleeding wound; next, when it was introduced into the stomach, but less so when injected into the large intestines, which have fewer absorbing vessels. Applied to the sound skin, and to a wounded muscle, if dry, it seldom produced any effect; and animals covered with scales or shells, did not suffer at all from the external application of arsenic. Applied directly to the nerves, it was inert. Lastly, he found that animals were never killed more certainly or quickly by arsenic than when it was injected into the abdomen. But upon this he lays no stress, as the same effects were produced by most infusions. Younger and smaller animals died sooner than such as were older and larger. Birds, notwithstanding their more irritable nature, were less sensible

to its effects than amphibia. A female frog, during copulation, when the irritability is greatly increased, was insensible to a dose which killed it at another time. Tadpoles died sooner than frogs, but the larvæ of flies were less susceptible than the perfect insect.

In whatever way the arsenic was applied, Dr. Jaeger observed after death no change upon the skin, except the paleness, and some blue spots nine hours after the death, upon the girl already mentioned. The gullet, and in birds also the crop, exhibited generally a slight redness, then further down purple-red stripes, more numerous in the vicinity of the cardia; which, as well as the stomach itself, in animals having a soft villous coat to their stomachs, was sometimes of an uniform purple-red colour, and sometimes spotted with it, without any difference from the mode of applying or form of the poison; but the muscular stomach of graminivorous birds shewed no appearance of redness, and in the aponeurotic portion of the stomach of a horse poisoned by arsenic, there were no traces of inflammation, which was otherwise general. The villous coat of the stomach is almost always softened, and as if macerated, and also somewhat swollen; and in general it can be easily torn or rubbed off in pieces with the finger from the coat beneath it. The inflammatory redness is not seated in the villous coat, which remains perfectly white, but in what is called the nervous coat, which is remarkably red, and exhibits every where purple-red warts or eminences; but the author often saw this separation of the villous from the nervous coat, without any inflammatory redness of the latter. These changes continue, though in a less degree, through the small to the vicinity of the large intestines, which is in general free from them, and only contains an increased quantity of effused mucus; but the rectum again is inflamed, and its inner coat swollen and softened. These appearances are not constant, and are very various in degree. Thus, our author discovered no traces of inflammation in the stomach or intestines of a bird, and a rabbit to which arsenic was administered by the mouth, or of another rabbit, into whose abdomen it was injected.

The other mucous membranes were less generally affected,

but our author sometimes found the trachea red and inflamed, and in one instance, the urethra of a dog. The serous membranes, which receive less blood and more lymphatic vessels, are little changed. Our author never observed real inflammation of the peritoneum, but the vessels, and especially the veins of that part of it which surround the intestines, mesentery, and omentum, were always turgid with stagnating blood.

The voluntary muscles were constantly and universally rigid; the limbs sometimes bent, but generally extended; the heart, urinary bladder, gall-bladder, and intestines were rarely contracted, but frequently distended by their contents.

The coats of the blood-vessels scarcely exhibited any change. But the veins, especially of the abdomen, were constantly turgid with much black fluid blood, generally mixed with some flocculi. A similar stagnation is observed in the cavities of the heart, especially of the right side, and coagula are very seldom found in them. Sometimes the lungs are also filled with extravasated fluid, but in general they are perfectly natural. In no other place was extravasated blood observed by our author, but the veins were everywhere full of black fluid blood. In the brain and nerves, there was nothing unnatural, nor in the various absorbent and secreting organs.

The putrefaction of animals seemed neither to be hastened nor retarded by their being poisoned with arsenic, whether they were buried or not. The generation of infusory animals, the production of larvæ and subterraneous vegetation in and about the bodies of poisoned animals, took place as usual. Our author is particular in these observations, because accelerated and retarded putrefaction have been alternately enumerated among the proofs of death by arsenic. However, it may be remarked, that the immediate contact of the arsenical solution, seemed in some degree to retard the putrefaction of the part to which it was applied in sufficient quantity.

Arsenical acid produced exactly similar effects, and in a greater degree.

So much for the *general* effects of arsenic; the following *local* effects were also noted. The green colour of the skin of a salamander was destroyed. The sound skin was seldom at all affected by it. When the arsenic was applied to the

wounded skin, it was never observed after death to be gangrenous or inflamed, was rarely swelled, was generally pale, and, for a considerable extent, the subcutaneous cellular membrane was filled with much stagnant gelatinous fluid. The œsophagus, stomach, and intestines were commonly, though not always, inflamed, when arsenic was administered by the mouth. In the girl already noticed, there was only a slight spotted redness about the cardia, a discoloration of the bottom of the stomach, and a very small brown spot where the villous coat seemed as if superficially burnt. Our author never observed real erosions, ulcerations, and gangrene of the viscera. The peritoneum was not inflamed in those animals which were killed by injecting an arsenical solution into the abdomen. The local application of arsenic generally rendered the muscles white, but seldom inflamed, and caused an increased secretion of serous fluid into the spaces between them. The nerves were not affected, and the blood-vessels very little. In the horse already mentioned, and into whose jugular vein two or three ounces of arsenical solution were injected, and which was put to death twenty-nine hours afterwards, there were only some discoloured spots in the left ventricle. When blood was received into an arsenical solution, the whole mass became black and gelatinous in appearance, then a coagulum formed in the centre, but it remained soft, and not defined, and never acquired the bright red colour on the surface.

We shall not enter into the detail of our author's reasons for his opinion concerning the manner in which arsenic acts. He adduces arguments to prove, that arsenic does not act mechanically by the sharpness of its particles, nor by its local action on the stomach, nor in the manner of the acrid poisons or dephlogisticating substances, nor upon the nervous system; but is analogous to the poison of the viper and ticunas, which act primarily upon the blood.

We shall, however, extract more fully the observations of our author on the proofs of poisoning by arsenic. These are of two kinds. The pathological proofs derived from the symptoms which precede death, the appearances of the body after death; and the chemical proofs derived from the properties of arsenic.

With regard to the first, he thinks it sufficient to mention, that not only several of them are often common in other diseases, and that there is almost none of them which have not occasionally been wanting, and that even several of them have been wanting at the same time. Hence these signs, collectively, only render the poisoning by arsenic, and the death from that cause, probable; certainty cannot be obtained but from the chemical proofs.

The chemical proofs consist either in separating the arsenic from the matters mixed with it, so that it can be recognized by its physical properties, or in subjecting it to the action of re-agents, which form compounds, distinguished by particular characters. Among the re-agents used for the detection of arsenic, our author thinks that the preference is due to lime-water, ammoniaret of copper, and hydro-sulphuretted water.

Lime-water must be used recently prepared, and hot. Our author found that it was sufficiently delicate to precipitate 1-30th of a grain of arsenic when dissolved in 100 grains of water, or 1-40th in 50 grains.

A saturated solution of ammoniaret of copper, is a much more delicate test, for it strikes an evident green colour with a solution of white oxide of arsenic, which contains but 1-500th of a grain dissolved in 50 grains of water.

"The precaution," he however adds, "which Rose discovered in regard to this re-agent, when added to fluids containing tannin, I found to be perfectly necessary and well founded; for although an infusion of tea did not, in my experiments, prevent the usual reaction of a dilute solution of arsenic, on ammoniareted copper, as Rose imagines,* I could not obtain any reaction of ammoniareted copper, upon the decoction of the herbs found in the stomach of a rabbit poisoned by arsenic, although other experiments indicated sufficiently the presence of the arsenic."

Water saturated with sulphuretted hydrogen, formed by the action of diluted muriatic acid on sulphuretted iron, is

* Gehlen observes, in a foot-note, that this difference of observation probably depended on the difference of astringency in the kinds of tea employed; for otherwise he found the phenomenon to be certain.

also a very delicate re-agent. Our author found it capable of detecting, by producing an obvious yellow colour, arsenic in a solution which contained only 1-1000th part of a grain of absolute weight, and in which it bore the proportion to the water only of one to 50,000 or 60,000. The small proportion of muriatic acid, which this hydro-sulphuretted water always contains, does not seem to injure its delicacy, when the gas is prepared with a moderate heat; but it must always be fresh, lest it lose its strength by keeping.

Our author now proceeds to the other method of analysis, by separating the arsenic from the substances with which it is mixed, so as to recognize it by its physical properties. The most common is the converting the arsenic into vapour, by laying it on red coals, or on copper heated to a dull red. In this way our author was sensible of the garlic smell of the tenth of a grain mixed with sugar; but he observes, that it is a very insufficient test, as it depends upon the accuracy of smell of the experimenter, and besides, phosphorus and zinc emit a similar odour. But, by collecting the vapours, so that the arsenic assumes its metallic state, we have an absolutely certain test. In this way Rose asserts, that he was able to detect the one-eighth of a grain of arsenic mixed with animal matters; and our author obtained a very evident sublimate from the stomach and duodenum of a rabbit, poisoned with two grains, and also from the inner coat of the stomach and its contents, of the girl already mentioned, who was poisoned by swallowing a small quantity of black oxide of arsenic. As an additional method of obtaining arsenic in its metallic form, our author proposes, in consequence of Davy's discoveries, the use of the galvanic pile.

This section is concluded by a comparison of the advantages of the methods proposed by Hahnemann and Rose for the detection of arsenic; but as we have not been able to procure an exact detail of these methods, it is not very intelligible. The following extract from a note by Gehlen gives, however, some account of the latter.

"It was by no means Rose's meaning to confine the proof to the obtaining arsenic by sublimation, but he considered it as absolutely necessary, when no arsenic in substance was found.

because the analysis of the suspected substance, or of the fluid obtained from it by re-agents, without the proper precautions prescribed by him, is, upon the grounds stated by him, very uncertain. An accident, which might render the sublimation abortive, such as the breaking of the vessel, might also happen in the other methods, and destroy the materials; and in this case, with Rose's procedure, we had previously obtained three tests; the precipitation with lime-water; the garlic smell by heating a small quantity of the precipitate upon charcoal, with the blow-pipe, and the analysis of a part of the fluid boiled with nitric acid,* and neutralized on purpose with water saturated with sulphuretted hydrogen. For the ammoniaret of copper, which is almost always inapplicable where there are animal fluids, becomes in this case absolutely so, on account of the formation of the yellow bitter principle, which it also precipitates."

Our readers will have perceived, that this dissertation is of considerable value, and will perhaps sympathize with the regret which we feel, that we have not been able to procure the original. Although too much of it seems to be devoted to a theoretical consideration of the manner in which arsenic acts upon living bodies as a poison, yet it seems to contain much useful information upon two important practical points; the symptoms produced by arsenic, in various classes of animals, and the means of detecting it by analysis.

Every person who has become interested in either of these subjects, must have discovered, with regret, how imperfect our knowledge of them is, and how very difficult it is to obtain or increase it. Systematic writers upon poisons, have jumbled together the symptoms of various doses operating under different circumstances, without discriminating the constant effects, if there be any, from the common or usual effects; nay, they have drawn their descriptions of the effects of poisons, not only from different poisons of the same class, but even from poisons of different classes, and from their effects upon animals of different classes. Poison must still be studied in the way of induction. We must collect all the special facts

* Rose seems to employ nitric acid for destroying the animal matter, with which the arsenic is mixed.

and observations; we must compare and generalize them, and proceed no farther in our general inferences than these facts warrant.

Hahnemann, who has written a book upon arsenic, has adopted a classification of poisoning, by means of it, into three degrees. When death follows the exhibition of the poison within twenty-four hours, it constitutes the first degree; and when later than twenty-four hours, the second degree; and when the case, though attended with dangerous symptoms, does not terminate fatally, it belongs to the third class.

Adopting, then, this division of Hahnemann, as being at least useful, we shall attempt a description of the effects of arsenic upon the human body, from a careful comparison of all the cases which have occurred to us in the course of our reading.

In the slightest case in which the operation of arsenic is recorded as producing poisonous effects, the symptoms are uneasiness at the præcordia, and a sense of heat there. These symptoms are worthy of notice, not so much as a character of poisoning, as, in the practice of medicine, on account of their giving us a very significant warning when we are trying arsenic as a remedy, that we have pushed it to the utmost that any prudent practitioner would venture upon. Where the dose of poison is somewhat greater, but not sufficient to produce death, violent vomiting is commonly the first symptom, although, in some instances, it is preceded by a sense of heat in the tongue and throat; in other cases these sensations are expressly mentioned as not felt in the whole course of the disease. In these cases, when the vomiting is instant, and the poison has been taken on a full stomach, the patient seems to owe his escape to the poison being discharged before it has time to act. The next symptom which claims our attention is the purging, sometimes of blood; but purging occurs less frequentlv in this slight degree of poisoning than in the more severe cases. In the region of the stomach and bowels, pain is frequently felt, but it is often rather an insupportable uneasiness and oppression than pain properly so called. The stomach is not described as swelling; and in one case, where there was hiccup, eructation, and difficulty of breathing, it is expressly mentioned, that it was not tense or swelled.

A sensation of coldness, especially in the extremities, and cold sweat, seems to have been almost always present, with general paleness, and paleness of the countenance; in some cases languor, faintishness, and a tendency to sleep. In this degree of poisoning, convulsions are not frequently observed, and the thirst and fever seem to arise from irritation in some persons, as they are seldom expressed. In one case only is *ardor urinæ* mentioned.

In the second degree of poisoning from arsenic, where the patient lives above a day or two, the first complaints are heat and thirst, or vomiting, or inexpressible distress; the first is less frequently observed than the other two. In one case of an infant killed by orpiment, the matter vomited is described as viscid and colourless. Purging is not mentioned in any of the cases of this set, but in one a fetid stool was procured by a pessary, and in one gripes are noticed; in two the belly swelled; in one there was great feebleness and lassitude; and in all, convulsions seemed to have taken place, in one case impeding deglutition. In three of the cases the body is mentioned as having been discoloured, or marked with livid spots; in one even blistered, and one was highly fetid. Two only were examined internally. In one the intestines were inflated, and the intestines and stomach red with turgid vessels; in the other the fauces and stomach were yellow, and the heart, spleen, and lungs, dark blue. The cases of this class are too few to afford any accurate inferences; besides, from the length of time, there is greater opportunity for the co-operation of other causes, whether previously existing disease, or the action of remedies.

In the third degree of poisoning by arsenic, where death takes place in a few hours, the symptoms succeed each other rapidly, or begin at the same time; the fainting and general debility almost precede the vomiting; the vomiting occurred in all the cases but two; purging or gripes in most of the cases; the matter passed by stool is in one case described as green, watery, and viscid. In one case there was vertigo, also general pains and loss of speech. Convulsions did not occur often, but there was sometimes hiccup. In a few cases there was much heat and thirst; even in one, in which (a

symptom more frequent than heat) there were complaints of a sensation of intense cold and paralysis of the extremities, with cold sweat. The pulse, in the only case in which it is mentioned, was slow and languid, and death seems to have generally proceeded from exhaustion and rapid sinking of the vital powers. In none of these violent cases is there any mention of delirium, or affection of the mind, except in one in which the poison was applied externally to the head.

The external appearance of the body after death is not uniform. In some cases it was swelled or livid; in others natural. The stomach in almost every instance is inflamed, abraded or even eroded, sometimes distended, and at others corrugated. Next to the stomach and intestines the lungs seem most frequently affected; as in almost every case in which the thorax appears to have been opened, they are described as livid, or having livid spots on their surface. In one case they are inflated, and in another flaccid. The liver is only mentioned in one case as gray, and the heart in another as flaccid. The blood seems to have differed very considerably; at one time being black and coagulated, at another black and fluid, and at a third florid and fluid.

In many of the cases the remains of the poison are actually found in the stomach, generally adhering to the inflamed points, to which it is probably fixed by coagulating the glairy fluid lining the stomach.

Nouvelles Expériences sur les Contre-Poisons de l'Arsenic. Par Casimir Renault, *Médecin, membre correspondant des Sociétés Académique des Sciences, Médicale d'Emulation et d'Instruction. A Paris, an.* IX. pp. 119.

[From the Edinburgh Medical and Surgical Journal, for January, 1811.]

This work, upon another branch of the same subject, has only fallen lately into our hands. It is also worthy of perusal, and is in a great measure founded on actual experiments made by the author.

He commences with some general considerations on counterpoisons. All gastric poisons may be arranged into two classes, into corrosive and narcotic poisons. The action of the

latter may be interrupted by a strong reaction of the vital forces; that of the former only by a change in their nature, which cannot be effected on the mineral poisons of this class but by chemical re-agents capable of converting them into innocuous substances. Taking arsenic is an example, M. Renault is of opinion, that only those re-agents can be considered as antidotes to it which fulfil the following conditions.

1. Which may be taken in large doses without any danger.
2. Which are soluble in water and the animal fluids.
3. Which act upon the poison, whether in a fluid or in a solid state, at a temperature inferior to that of the human body.
4. Whose action is speedy.
5. Which are capable of combining with the arsenious acid in the midst of the juices and contents of the stomach.
6. And which, in acting upon the poison, deprive it of all its deleterious qualities.

We shall pass over our author's chemical critique on Navier's directions for preparing his celebrated martial hepar, and proceed to his own experiments, which were all made upon dogs, with every precaution to render them as little complicated as possible. He had to overcome the difficulty of forcing the dogs to swallow the fluid, and to retain it after it was swallowed. The first object he accomplished satisfactorily, by keeping the dog's mouth open by a piece of stick placed between the grinders, and injecting the fluids through a tube of elastic gum, introduced into the stomach; but the second was only imperfectly effected, by his never leaving the subject of experiment a moment, and forcibly keeping the muzzle closed by strong compression with the hands, as soon as the precursory signs of vomiting appeared.

His first experiments were made to ascertain the powers of sulphuret of potass, which is generally considered as the most powerful antidote of arsenic. Upon mixing solutions of these substances, they instantly become turbid, and afterwards deposit a yellow precipitate. This mixture, after diffusing the precipitate through it, he injected into the stomach, and, in one instance, he used the precipitate diffused in water; but neither the sulphuret of potass nor that of lime seemed to retard or diminish the deleterious effects of arsenic. Vomiting,

purging, moaning, and prostration of strength, were the almost invariable harbingers of death. On dissection, the stomach was found to be inflamed or livid, generally filled with a glairy fluid like white of egg, often interspersed with flocculi like coagulated albumen, and its surface was sometimes lined with a consistent pseudo-membrane of the same nature.

Water impregnated with sulphuretted hydrogen was next employed, and with some success. A single grain of arsenic is sufficient to kill the strongest dog, and yet, in ten instances, our author gave it in solution, in one to the extent of even ten grains without proving fatal, even although the arsenical solution was given some minutes before the hydrosulphuret. It only remained then to try its effect against arsenic in substance, and here it most unfortunately failed completely; as, in almost every instance of poisoning, the arsenic is used in substance.

M. Renault has examined whether arsenic in its metallic state be a poison. Some experiments of Bayen and Sage seemed to prove the negative, but they were not conclusive. As it is almost impossible to reduce arsenic to powder without its becoming oxidized, our author had recourse to its alloys for deciding the question, and he found that mispickel, given to the extent of two drachms, had scarcely any effect, which accords with the conclusion drawn by Bayen in his work on tin, and proves that the arsenic which may be contained in that metal need give no uneasiness, as it is in its metallic state.

The black oxide of arsenic is, however, a deadly poison, and it has the singular property, that when it acts sufficiently, it produces in the stomach an exudation of blood, and infiltration of the same between the coats of that viscus, without any trace of erosion. A dark gray pulverulent substance, sold publicly in France under the names of *poudre aux mouches*, *mort aux mouches*, *cobalt testacé*, is in fact the black oxide of arsenic, and produces exactly the same effects. Our author therefore contends, and properly, that its sale should be subjected to the same restriction as the white oxide and sulphurets of arsenic.

The native sulphurets, both red and yellow, were given in large doses to dogs without producing any severe effects; the artificial sulphuret was poisonous even in a small dose. M.

Renault thinks that this remarkable difference of effect is owing to the arsenic being oxidized in the latter compound, and in its metallic state in the former.

The salutary effects of vomiting, so often apparent in M. Renault's experiments, have led him into a digression upon the mechanical causes of vomiting, and from thence to some practical inferences concerning the treatment in cases of poisoning. Having proved the inefficacy of all antidotes, M. Renault places his only hopes in exciting speedy and full vomiting; and as a full stomach has been found by experience to diminish and counteract the effects of poison, and is highly favourable to vomiting, he advises the gorging of it with mucilaginous and gelatinous liquors, such as linseed tea, milk, broths, or even with warm water. As vomiting, however, is certainly the chief means of saving a person who is poisoned, and as it does not always take place immediately, our author has proposed a method of washing out and emptying the stomach mechanically, by means of a large tube of elastic gum and a syringe. We shall give the particulars in his own words.

"The tube should be long enough to have one of its ends, which should have two orifices, inserted into the lowest part of the stomach, and of a diameter large enough to permit the passage of the half-digested substances which may be in it. At its upper end it should have a brass cup adapted to the extremity of a syringe. The tube is to be introduced through the mouth or nostrils, and the syringe fitted to it. We are now to throw gently into the stomach a certain quantity of liquid to dilute, suspend, or dissolve the poison. We then draw back the piston, and suck up a certain quantity of the contents of the stomach. By repeating these two operations several times, this viscus will be well washed, and the poison extracted from it without effort, almost without pain, and in a very short time. Provided the poison have not passed the pylorus, the possibility of extracting it in the method I propose, will be evident to all who have any knowledge of mechanical philosophy. When its efficacy shall have been established by trials on the human body, its use may become very extended. Until experience shall have decided this, I have made some trials on

living animals. I have injected to the extent of eight ounces of water into the stomach of several small dogs, and have been able to pump it entirely out by the procedure I have described. Indeed it could not be otherwise, when we consider with what success similar means are used for emptying the bladder of coagulated blood."

In the after treatment, our author judiciously recommends bland nutritive fluids as preferable to all reputed antidotes, which are uniformly more or less irritating. In the same manner, to remedy the debility occasioned by the poison, we must trust to a proper diet and time.

Our author now proceeds to the very important discussion of the proofs of death by arsenic; and although caution be highly commendable, and indeed indispensable on the part of a professional man called upon to report, still we think that scepticism may be carried too far. It is perfectly true that no single symptom, or, perhaps, no train of symptoms is the uniform and peculiar effect of arsenic; and we may grant that the same uncertainty exists with regard to the appearances which may be discovered on the body after death. But in addition to the cases of this nature already on record, our author has related one on the authority of Prof. Chaussier, in which a man swallowed arsenic in large pieces. The only symptoms produced were slight syncopes on the approach of death. On opening the body, the arsenic was found almost in the same state in which he had swallowed it, and it was not possible to discover the least appearance of erosion or inflammation. Now in this case there was surely no uncertainty; but it will be said, that if no arsenic had been found in the stomach, then there would have been no proof. True; but if no arsenic had been contained in the stomach, then the death would in all probability have been preceded by more violent symptoms, and its effects would have appeared upon the stomach. It was the largeness of the dose which, as it were, extinguished life suddenly, and precluded all reaction. In the same manner, the case here cited upon the authority of M. Dupuytren, to prove that erosion of the stomach may take place where no corrosive poison has been swallowed, is perfectly inconclusive. The body of a woman was opened. There was a hole in the large

extremity of the stomach several centimetres in circumference, through which a small quantity of a reddish fluid had escaped into the abdomen in the vicinity of the spleen. The edges of this hole were thin and even; there was no inflammation except on the parts of the stomach and liver next to the cardiac orifice. But M. Dupuytren knew nothing of the history of this case;—what proofs have we, then, that this woman was not poisoned? It is stated that she had been recently delivered; there were marks of blisters on the legs, and one of the veins of the foot had been opened. Besides, M. Dupuytren could not detect poison by chemical analysis in the contents of the stomach or abdomen. But all these taken together do not amount to the lowest degree of proof that the appearances on the stomach were not produced by corrosive poison. And it may be fairly remarked, that if, in Paris, where bodies are dissected by thousands, no less doubtful proof could be found, that erosions of the stomach sometimes happen independently of poison, it almost affords a presumption that they are only caused by poison. Be that as it may, there generally exist in cases of suspected poisoning, some proofs affirmative or negative of the suspicion, if we have skill to discover them. We admit it to be difficult, but to say that is impossible to discover them is injurious, as it encourages carelessness and indolence, and obstructs the progress of science. We have, however, less objections to our author's conclusion than to his arguments in support of it.

"From all this I conclude, that, except in a very small number of cases, the examination of the body cannot furnish all the data necessary to pronounce judgment in cases of poisoning from arsenic or its compounds; and that, united to a knowledge of the symptoms preceding death, it may afford strong presumptions, but rarely amounting to the degree of certainty necessary to pronounce an affirmative or negative decision."

M. Renault, lastly, treats of the effects of arsenic applied externally. His experiments were again made upon dogs. When the skin was sound, it excited a pustular eruption without inflammation, but, when the skin was broken, more serious effects followed, both general and local, and sometimes death.

The Morbid Anatomy of the Liver: being an Inquiry into the Anatomical Character, Symptoms, and Treatment, of certain Diseases which impair or destroy the Structure of that Viscus. Order I. *Tumors. Part* I. *On the Tubera circumscripta, and Tubera diffusa. By* J. R. FARRE, M.D. *Large* 4*to. pp.* 24, *with two coloured engravings.* 1812.

[From the Edinburgh Medical and Surgical Journal, for January, 1813.]

WE have great pleasure in announcing to our readers the first fasciculus of a work, which is obviously the result of much personal observation and laborious research, in a very important department of morbid anatomy; and which, from the execution of the present specimen, bids fair to throw considerable light on a class of diseases, respecting which we are apt to think and to speak with some want of precision. With the indefinite views, that are commonly attached to the terms *scirrhous liver*, *liver-disease*, &c. it is impossible that the practitioner can exercise much discrimination in the choice of his curative measures: and, in fact, it but too commonly happens, notwithstanding the varieties of morbid condition which those terms comprehend, that one system of practice is pursued, as if the organ in question were subject but to one modification of organic disorder. To correct these indistinct notions upon the subject, nothing seems to be better calculated than an arrangement of the various changes to which the liver has been found liable, more especially when accompanied by accurate delineations of the morbid conditions, and by histories of the symptoms, which had occurred during the progress of these changes. Such a combination, uniting the advantages of the methods adopted by Morgagni and Baillie, has never before been presented to the public; and from the excellence of the delineations exhibited in this work, nothing short of the actual exhibition of the diseased viscus itself is left unsupplied. Of the latter, the reader can only estimate the perfection by inspecting the work itself; but of the objects of the publication, and of the contents of this fasciculus, we shall endeavour to present him with a faithful account.

Dr. Farre informs us, in his introduction, that his treatise will be limited at present to the investigation of *tumors*, *scrofulous* affections, and the consequences of *inflammation* of the liver; which, we presume, will constitute the three Orders of his classification. These varieties of disease, he observes, impair the stricture of the liver in different modes:

"For tumors are chiefly injurious to it by their unlimited powers of growth or multiplication; but inflammation simply disorganizes the liver by obliterating its structure. Hence the ultimate state of the former, is the utmost degree of enlargement which is compatible with life; of the latter, rather a reduction of bulk, but an increase of solidity. Scrofula only proves destructive to the structure of organs when its tubercles inflame: the disorganizing effect of this disease on the liver is therefore analagous to that of inflammation.

By the word Tumor, which characterizes the first Order to which our attention is at present directed, the author does not mean a mere intumescence or enlargement of the viscus; but, following the example of Mr. Abernethy, he designates, as tumors, those swellings which arise from a new growth, differing from the original composition of the part affected. Whence he defines *Tumors* in these words: "Swellings, either circumscribed or diffused, generally differing in the structure from the natural textures of the affected organs, and increasing in bulk by an inherent growth."

The first genus of Tumors, which occupies this fasciculus, he has denominated *Tubera*, and defined, "Tumors of a cellular structure and fungous nature, producing, in general, remarkable elevations on the surfaces of the affected parts." Thus it appears, as well as from the appropriation of the term Tubercle, in the passage above quoted, to the scrofulous affections of the liver, that our author does not consider the latter as a diminutive of Tuber, but as totally distinct in its signification, and not implying the *fungous* and cellular structure, which belongs to the Tuber. The varieties of these fungous *tubera*, Dr. Farre arranges under two heads or species, with the epithets *circumscripta* and *diffusa*, the characteristics of which are detailed with much perspicuity.

1. The *Tubera circumscripta* are so denominated, because they are determinate in their figure: they are likewise distinguishable from the other species in being found only in the liver, seldom or never originating, the author seems to believe, in any other structure of the body. This tuber is the same with the "large, white tubercle of the liver," described by Dr. Baillie, in his "Morbid Anatomy," chapter IX, and figured in his 5th fasciculus of engravings, Plate III. fig. 2 and 3.—Dr. Farre observes, in a note, that it is with extreme reluctance he ventures to propose another name for this disease; but, he adds, "the epithets '*large*, *white*,' are not characteristic, being common to both species, and belonging indeed in a more remarkable degree to species II. It seemed to him also objectionable to apply the term, *Tubercles*, indifferently to these large tumors, to certain irregularities of surface produced by chronic inflammation, and to scrofula." Whatever inconvenience the multiplication of synonymes may occasion, the greater approximation to accuracy will certainly more than counterbalance it.

Dr. Farre proceeds to describe the characteristics of the tubera circumscripta, which cannot be stated to the reader so satisfactorily as in his own words.

"Character. Their colour inclines to a yellowish white; they elevate the peritoneal tunic of the liver, and their projecting surfaces, slightly variegated with red vessels, deviate from a regular swell, by a peculiar indentation at or near their centres, which are perfectly white and opake. They vary much in size, which depends on the duration of each tuber: for, at its first appearance, it is very minute, but during its growth it assumes the character above described, and at its maturity exceeds an inch in its diameter. They adhere intimately to the liver, and their figure is well defined. In the interstices of the Tubera, the liver is paler and more flabby, its cohesion is weaker than natural, and slight effusions of blood are sometimes found. They commonly remain distinct at the surface of the liver, but internally they ultimately coalesce, and form immense morbid masses which pervade its substance. The patient often lives until the mass occupies the greatest part of the abdomen, and the natural structure of the liver is

nearly supplanted. They possess so close a cellular structure, that the section of them, at first view, appears solid and inorganic; but on the edge of the knife, by which they have been dissevered, an opake white fluid, of the consistence of cream, is left, and a fresh portion of this fluid is gathered on it at each time that it is repassed over the surface of the section. Their cellular structure becomes more apparent after long maceration." p. 6.

The engraving, which represents the state of disease above described, is one of the happiest specimens of the pencil and the graver that we have ever seen executed on an anatomical subject: it almost supersedes the necessity of actual dissection, so true and faithful is the picture. The preservation of the colour of the different parts is a most important advantage over the best engravings in black. So far as a knowledge of the actual state of disease in this condition of the liver can be communicated; so far as the results of anatomical research can enlighten us, this work most fully accomplishes its end, and is entitled to unequivocal commendation. But as we some time ago took occasion to express our dissent from the popular doctrine, that a minute knowledge of the anatomy of the human body, in health, is the best or almost sole foundation of the science of pathology and of the practice of physic;* so we cannot but remark, with regret, at present, how little even this most lucid display of the results of morbid anatomy contributes to extend the practical powers of our art. The author, with a candour equal to his ample knowledge of the subject, gives the following account of the diagnostic appearances, by which this state of the liver is indicated during life.

"Symptoms. The patient suffers pain in the region of the liver, languor, loss of appetite, and cough; *but until the liver, by the growth of the Tubera, descends below the hypochondria, a distinct judgment of the case cannot be formed.* Then the functions of the alimentary canal are more impaired, the body wastes, and the enlargement of the liver, its hardness and remarkable irregularity of surface, may be distinguished through the parieties of the abdomen. In the advanced stage, the pa-

* See the Inquirer, Edin. Med. and Surg. Journal, for Jan. 1809. Vol. V.

tient is distressed by its enormous bulk, the respiration is oppressed, the bowels are prone to diarrhœa. Neither jaundice nor serous effusion into the peritoneum are symptomatic of this disease: they may be conjoined, but it is an accidental circumstance, rather than a necessary consequence." p. 7.

The result, then, in this instance, as in many other cases of chronic derangement of structure in the viscera, to which the fullest investigation conducts us, is, that before the symptoms, which are sufficient to point out the exact seat and nature of the disease, unequivocally manifest themselves, the structure of the organ is irretrievably ruined:—before we learn to what point we should direct our remedies, all remedies are become useless. We remember to have heard a remark, made by a person unacquainted with medicine, relative to the character of an eminent cultivator of morbid anatomy;—that "he was possessed of a singular talent in *distinguishing* diseases, but that he was incapable of *curing* them, when detected." The remark should have been applied to the science, and not to the professor. For, in truth, to what unessential ends does not the sum of the knowledge of the morbid anatomist frequently conduce! to the naming of the viscus, which is the seat of an incurable malady! to the clearing up of a doubt, whether a tumor, which no medicine can reach, be situated in the spleen, the mesentery, or the omentum! to determine the presence of pressure or morbid growth in the sensorium; which, if exhibited to the eye, like honey-comb in a hive of glass, would defy the exertions of medicine and surgery!

But, it may be said, discrimination of diseases by their symptoms is the first characteristic of an able physician, that every improvement of this art is an approximation to a better practice, and that it is impossible to set limits to the advancement of human skill, while pursuing knowledge upon the basis of observation. We admit the truth of the remark, and are far from intending to decry the pursuits of the morbid anatomist, by the digression which we have just made. We wish only to affix a right estimate to the degree of knowledge which is thus to be obtained, and not to mistake the information that is curious, for that which is useful: we shall see, before we conclude, that our author modestly limits the practical benefits to

be derived from the facts which he has here promulgated, to the prevention of injurious measures.

It is a singular fact, which we also have witnessed, that, when the mass of tuberated liver nearly fills the whole abdomen, so that the hardened and irregular edge of it is felt extending from the spine of the ilium across to the umbilicus, or even lower, neither ascites nor jaundice shall exist. In consequence, probably, of the lax and flabby texture of the interstitial parts among the tubera above stated, the circulation of the vena portæ goes on with little interruption. And it is scarcely less surprizing, to what a great extent this morbid growth has often attained, before it is detected, or any considerable inconvenience is produced by it.

Dr. Farre has related two cases, in which this fatal disease of the liver attacked men subject to gouty affections, and frequent indispositions, which were ascribed to cold or indigestion, both of whom had been intemperate in early life. The second patient, whose liver is represented in the plate, had suffered irregular paroxysms of pain in the epigastrium, but when he consulted a physician at the end of March, 1811, he complained only of "cough and uneasy sensations in the epigastric, and right hypochondriac regions." When the naked abdomen was examined, the liver was felt projecting into the umbilical region, filling the whole space of the abdomen, which is between the umbilicus and the margin of the thorax. This part of the belly was tumid and hard, presenting a surface irregular from tubera, which could be distinctly felt under the integuments. Yet the patient positively affirmed, that he had noticed the enlargement only six weeks before this period: and his cough and dyspnœa were not greater in degree than it was fair to impute to the great bulk of the liver. His pulse was natural, but his appetite defective, and the bowels rather torpid. "There was no obstruction to the circulation of blood through the liver, for there was no effusion into the peritoneum, nor to the flow of the bile, for the skin and urine were not in the slightest degree jaundiced." The principal attempt made by medicine was to regulate the bowels by rhubarb, and to allay pain or procure sleep by opium. The patient died in the

beginning of July; and the body was examined on the following day.

"The liver occupied the hypochondriac, epigastric, and umbilical regions: a line drawn across the anterior superior spinous processes of the ilia would have defined its extent; so that, a few convolutions of the small intestines in the hypogastric region excepted, the diseased liver alone appeared, after the section of the abdominal parietes had been completed. The liver was removed. Its surfaces were covered with tubera: more than fifty were counted on its concave surface, and on its convex surface there was a still greater number. All these tumors had the same character, (see Plate I.) viz. a circular margin, elevated, firm, and white, with a depressed and very white centre, resembling a cicatrix. The only deviation from this character was occasioned by a coalescing of two tubera, by which their figure was changed to an irregular oval. Besides these mature tubera, a countless number of them in their incipient state appeared in all directions, &c." (p. 13.)

Dr. Farre has only met with one variety of this species of hepatic tuber, which differed from the preceding chiefly in the smaller size and firmer consistence of the tumors. Although he has seen two cases of this disease, in which there was at the same time a scrofulous condition of the mesenteric glands, yet he is inclined to dissent from the respected authority of Dr. Baillie, who deems the tubera circumscripta of a scrofulous nature. The strumous tubercles of the liver Dr. Farre considers as differing essentially, both in their character and termination, from the fungous tubera; and this difference, he contends, is farther evinced by the consideration of the very distinct texture of the tubera diffusa, with which the T. circumscripta are obviously allied.

2. The *Tubera diffusa*, and the very equivocal means of diagnosis which present themselves to the view of the practitioner, are briefly described by our author in the following terms.

"Character. These tumors not only pervade the substance of the liver in a distinct or in a confluent form, but also appear at its surface, elevating more or less its peritoneal

tunic. They rise from the surface of the liver with a more gradual and uniform swell than the tubera circumscripta, and are, in different subjects, of various figures, sizes, colours, and consistence; often pulpy. No texture seems to escape the ravages of this fungus. It appears indifferently in all the viscera, in the cellular membrane, and even in the bones.

"Symptoms. These vary in proportion to the varied seats of the disease: the diagnosis, therefore, must depend on one of the circumstances from which its name is derived, viz. its dispersion through many textures of the body. But when this disease affects the liver in particular, then the symptoms will not materially vary from those which accompany the Tubera circumscripta." p. 15.

Of the tubera diffusa there are many varieties, (which will be the subject of discussion in the next fasciculus) agreeing with the T. circumscripta in their cellular structure, and with each other in their co-existence in the liver and other organs of the body. From this circumstance, that many organs are at the same time oppressed by their growth, they are in general more speedily fatal than the T. circumscripta: but instances of the disease are not unfrequent, in which the other viscera are infested with these tubera, while the liver is altogether free from them. With this variety in the seat of the tubera in the different organs, the symptoms must necessarily vary extremely: and in fact, no two diseases could differ more widely in their phenomena than the two cases of the T. diffusa related by Dr. Farre.

In the former of these cases, the first symptoms were a cough and diarrhœa, which were followed, after several weeks, by an enlarged belly, as the liver descended below the umbilicus, and at length by symptoms of hydrothorax, of which he died six months after the distention of the abdomen commenced. On dissection, some serous effusion was observed in the sacs of the peritoneum, of the left pleura, and of the pericardium: the liver was found enormously large and tuberous, weighing upwards of fifteen pounds; and at the same time, from the mucous coat of the stomach, near the cardia, there grew a cluster of tubera, that projected into its cavity, which

were not sufficiently advanced to interrupt the course of the alimentary matters, and had not therefore been suspected. The remarkable increase of bulk in the liver was occasioned by the growth of Tubera, which differed from the T. circumscripta in the following circumstances.

"They were less numerous; for, on the concave surface of the liver their number did not exceed twelve: they were as minute at their beginning, but at their maturity considerably larger, their diameters being rather more than three inches: at no period of their growth were they externally indented, but, on the contrary, they rose from the liver with a gentle and uniform swell, each being either round or oval; their external surfaces had a motley appearance, their white colour mingling with the brown colour of the liver; but a section (Fig. 1. Plate II.) displayed the appearance of the Tubera distinct from the substance of the liver, on which they seemed continually to encroach, and to approximate to each other by waving margins: their texture was coarser, but it yielded a similar whitish fluid." page 17.

In the second case, the principal symptoms were seated in the head: there was excruciating headache, increased to torture by motion, and aggravated in regular daily exacerbations, accompanied with some cough, nausea, vomiting, frequent pulse, and subsequently with slight delirium and convulsions. The disease terminated fatally in about two months; and, on dissection, the Tubera in question were found in the following situations: namely, one, somewhat larger than a pigeon's egg, in the medulla of the hemisphere of the cerebrum; another, of smaller dimensions, in the posterior part of the same hemisphere; and vestiges of smaller ones in the cerebellum and corpora striata;—one of large size occupied the seat of a lymphatic gland, under the left angle of the inferior maxillary bone; and round one of the right bronchial glands, as a nucleus, an immensely large tuber had formed;—in the liver, there was a single tuber, which in structure resembled that in the lung;—and to the adipose tunic of the left kidney, a tuber, of eight inches in circumference, was attached. How vain the administration of mercurials, of cinchona, of rhubarb, of antimony, and

even opium, with the application of blisters, proved, even for the alleviation of present distress, it is unnecessary to state: but this consideration leads us to the inferences, with which Dr. Farre concludes this fasciculus.

"The investigation of Disease by Anatomy," he remarks, "not only improves the diagnostic part of medicine, by connecting, as far as it can be done, the sign with the morbid change; but it also improves the therapeutic, by gradually *separating curable from incurable* disease, or by indicating the stage at which the former is converted into the latter. It is, therefore, one important use of Morbid Anatomy, to point out the boundaries beyond which it is not only unavailing, but *injurious for art to interfere*, except to diminish suffering. I venture to oppose this truth to the reverse practice, apparently founded on a maxim, that if an organ be subject to many obscure diseases, of which one or more can be cured, but the others are incurable, then all should be treated like the curable disease." p. 21.

His allusion is obvious: and he goes on to explain, that, as far as his observation has gone, the operation of *mercury* is not beneficial to patients afflicted with the diseases here described. He justly observes, that few medical men now think of trying such a course of medicine for the removal of tumors, (in the restricted sense,) when they appear externally: and still less effectual can it prove in the cure of either the tubera *circumscripta* or *diffusa:* "for by the time that the most careful examiner can distinguish them, the progress of the disease has been already so considerable, that *the mercurial action tends only to exhaust powers, which art will subsequently in vain attempt to restore.*" With the view of leaving no instruction to be casually inferred by the reader, Dr. Farre candidly admits, that, in three of the four cases, *too much was done* by ineffectual efforts to cure; while, in the remaining instance, a mere palliative plan effected all that medicine was capable of,—"it clearly diminished, but did not inflict any, suffering."

Although we cannot but lament, that the benefit produced by the cultivation of morbid anatomy is, in these cases, but negative; yet, as it effects all that human research can accom-

plish, we most fully accord with the concluding sentiment of our author, that "this view of the subject is not derogatory: for the perfection of medicine consists, not in vain atttempts to do more than nature permits, but in promptly and effectually applying its healing powers to those diseases which are curable, and *soothing those which are incurable.*"

We shall look anxiously for the succeeding fasciculi of this elegant work, as well as for the smaller publication on a similar subject, announced by Dr. Farre, in conjunction with Mr. Travers, and intended to appear periodically. The simplicity, and candour of the opinions advanced in the treatise before us, as well as the according accuracy of the descriptions and graphic delineations which it contains, lead us to anticipate with confidence, that his labours will ultimately put us in possession of a more complete knowledge of the varieties of morbid change, which the viscera undergo, than is to be obtained from the works of his predecessors.

FOR THE ECLECTIC REPERTORY.

CASE

Of the Effects of Blistering in preventing Mortification.

By SAMUEL POWEL GRIFFITTS, M.D.

The following Case, exhibiting some variation in the treatment of a disease, which frequently proves mortal, induces me to offer it for publication.

10th mo. 5th, 1804. I was called to visit C——— F———, aged fifty-three years, who, in general, enjoyed good health, and had, for some years past, retired from an active share in business. About twelve months ago he strained his left ancle, and about six months ago, received a severe shock by striking the same foot against a board, with such violence, as to break the shoe-buckle; and a few days since, strained the same foot. He wore very small uneasy shoes for the last month; of these particulars he gave me no information at the time, but complained of pain in the left foot, and had had dyspeptic symptoms for about six weeks. Five weeks ago he had a numbness in his left shoulder, and four weeks ago a similar affection of the left hand. Two nights since, he was seized with a coldness in his foot and leg, which now extends nearly to the knee. From the 11th to the 19th he slept in his easy chair—the dependent posture of the foot being the only tolerable one. His tongue was dry—the foot and leg swelled, cold and nearly colourless. A small pale red spot, which was often painful, appeared about the center of the upper part of the foot.

19th and 20th. The swelling subsided, and he could lie in bed with the foot in a recumbent posture.

21st. In the morning, a sphacelated spot appeared under the two smallest toes. Until this time he had taken no medicine but the tincture of guaiacum, and had been directed to live generously. The bark, in powder, was now substituted for the guaiacum, and used very freely, as much as half a pound in the twenty four hours. The beer or ley poultice was applied; and the sphacelus having spread by afternoon, the charcoal poultice was substituted in its place.

On the 22d, Dr. Wistar was called in, and the fermenting poultice, with charcoal, was used. The bark was continued, with wine and porter, freely.

23d. Dr. Physick was called in. The same remedies were continued, with the addition of pills of volatile alkali until the 27th: the sphacelus having at this time made considerable progress, half way up the leg; when Dr. Physick proposed a large blister plaster just below the knee, where no disease, as yet, was to be perceived. The skin lower down appeared of a dusky red colour, commonly termed erysipelatous. We were much gratified next day, by observing that the blistered part looked healthy; and, on the 29th, applied another blister plaster lower down, near the sphacelated part, which produced a good blister without any unpleasant consequences. The carrot poultice was applied to the dead part, until the 2d day of the next month, to remove the smell. The blistered part was dressed with an ointment composed of ungt. basilic. and spt. terebinth. This night he was very restless: nourishment was given freely; the bark was omitted, on account of the stomach's being nauseated, for a day or two, when it was resumed in the form of decoction and tincture. The bowels were kept open by glysters, and a moderate dose of tinct. theb. given every night. The progress of the mortification appeared to be stopped, and several incisions were made in the foot.

11th mo. 1st. The line of separation was now very distinctly marked; the pulse and spirits were good; the sphacelated part was washed with a mixture of equal parts of nitrous acid and river water, which evidently removed the fœtor and swelling.

3d. Continued doing well; omitted the nitrous wash as unnecessary. A diarrhœa came on, for which chalk julep, sago, and claret were prescribed.

4th. The diarrhœa had ceased.

5th. Dressed the blistered parts with ungt. album.

6th. The healthy parts, about the line of separation, swelled.

7th. The last night was the third bad one he had passed, though well in the day-time. A semicircular incision was made through the integuments, just below the healthy part, the blistered part not being all in an healthy state, but some of it inflamed, to which a bread and milk poultice was applied.

8th. A bad night—a dark part in the skin, near the line of separation on the upper part, which was dressed with the turpentine ointment. The under part of the leg suppurated kindly.

9th. His tongue was now moist, which had hitherto been dry. He took the camphor mixture to-night.

10th. The tendency to delirium at night, which has appeared for some time, was absent last night, though he got but little sleep. His appetite and general health rather better; the leg much improved. He took senna tea to day, as he has frequently done, when costive. Took the camphor mixture at night.

11th. Took forty-five grains of camphor in the mixture to-night, and rested well. Appears much better to-day, in every respect.

12th, 13th and 14th. Doing well, except an hectic blush on his cheek, at 11 A. M. and at night. Free discharge of pus. Peruvian bark, in wine, and elixir of vitriol were now used, and continued to the 25th instant, with laudanum at night. The separation goes on rapidly. The dressings were now changed for a bread and milk poultice, with some flaxseed meal.

27th. The sore not looking healthy, the turpentine ointment, with the poultice of bread and milk, were applied until the 29th; when the healthy appearance of it returned.

The next month nothing particular occurred; the parts were dressed with ungt. alb.—The separation proceeded favourably; and his health was much improved.

1805. 1st mo. 3d. Discontinued the laudanum, which he had used till this time, seventy drops every night. He slept as much, though not so sound, as when he took it.

11th. Last evening, a considerable portion of the sloughing matter appeared to separate, suddenly, from the under part of the leg. He was seized with a trembling and nausea, and this day had a loss of appetite.

12th. He was better; part of the sloughing matter was removed—the separation progressed, and on the 21st, the fibula was bare.

2d mo. 21st. Continues mending. This day, the tendo Achillis sloughed off.

3d mo. 1st. The fibula appeared to exfoliate at the uppermost part of the sore. For a few days past, he has felt more

uneasiness than usual in that spot—next day the lower part of the fibula was removed, by sawing it off.

5th mo. 6th. The sore went on healing to this day, when the ancle and foot were removed, by sawing through the tibia, about an inch below the separated part.

The sore healed slowly until the 11th mo. when the bone, which had been left, was removed; and the sore was not entirely healed until the following summer. He lived several years afterwards, in apparent good health.

I have been particular in this interesting case, as I think the practice is rather new, and that it will lead to some considerable improvements. Although the bark was given very freely, yet I cannot but attribute the check given to the mortification, to the use of the blistering plasters; and have since applied them, with manifest advantage, in cases that appeared analogous to the present. I am induced to believe that the original disease was inflammation of the fibula, and that this bone was affected in the same manner as the bones are in paronychia. I have therefore, since that time, blistered very freely in paronychia, both where the inflammation of the skin was active, as well as in that passive state of it called erysipelatous, and with the most desirable success. I do not hesitate, after bleeding and purging, when such evacuations are called for, to trust entirely to blistering, in these cases, whether the affection is confined to a finger only, or is extended to the whole hand.

Philad. 6th mo. 24, 1813.

FOR THE ECLECTIC REPERTORY.

The Editors are indebted to an obliging and valuable correspondent, for the following interesting account of the life and character of one of our most distinguished medical brethren.

DIED, on the 19th of April, 1813, in the sixty-eighth year of his age, BENJAMIN RUSH, M. D.

Dr. Rush was born on the 24th of December, 1745, old stile, on a small estate belonging to his father on Poquestion creek, twelve miles distant from Philadelphia. At an early age he was sent to the school of the Rev. Dr. Samuel Finley, in Nottingham township, Cecil county, Maryland. In the spring of 1759 he entered the college of New Jersey, and in the autumn of 1760 he received the degree of bachelor of arts. At college his character for talent was very respectable, and he was distinguished for a rapid progress in his studies. In the exercise of public speaking he evinced great eloquence, and his friends expressed a strong desire that he should study law; he consented to their wishes; but on a visit to his old master Dr. Finley, whom he venerated as a saint, and loved as a parent, he was dissuaded from the scheme; and it is to Dr. Finley's discernment that the medical profession is in this respect indebted for the advantages it has derived from the subsequent labours of Dr. Rush. Dr. Finley's advice was founded upon an intimate acquaintance with the head and heart of his pupil, and he considered the qualities of both admirably adapted to the practice of that profession which he afterwards adorned.

Renouncing the bar, he commenced his medical studies under the direction of Dr. John Redman, of Philadelphia, with whom he continued six years. Of his diligence during this period, some estimate may be formed from the fact, that in the whole of that time, he absented himself from his business *only two days.*

In the summer of 1766 he sailed for Europe. He proceeded first to Edinburgh, where he remained until the spring of 1768; when he received his medical degree from the hands of Drs. Cullen, Black, Gregory, and the historian Dr. Robertson. His thesis was written "*De coctione ciborum in ventriculo.*"

The winter of 1768-9, he passed in London; and in the spring of 1769 he went to Paris, and returned to America in the summer of the same year.

Whilst abroad he was busily employed in the acquisition of useful information on every branch of science connected with medicine; and soon after his return, Dr. Rush was unanimously appointed Professor of Chemistry in the college of Philadelphia, viz. on the 1st of August, 1769.

Dr. Rush very quickly became engaged in the practice of his profession; his leisure was devoted to reading and writing on subjects of science, morals, and politics. About this time appeared his Essays on Negro Slavery, and subsequently, those on Capital Punishments;* both of which he reprobated as inconsistent with christianity and sound morality. To the pious and humane disciples of Fox and Penn, these essays were particularly grateful, and, by serious christians of every sect, they were approved and admired. The influence of these writings has been been felt and acknowledged, at least in the state of Pennsylvania, where they have certainly been instrumental in effecting the most salutary modifications of the penal code, and of the laws respecting negro slavery.

Among the earliest advocates of the American revolution, Dr. Rush drew his patriotic pen, and laboured sedulously to promote the best interests of America. He served his country in other ways; he sat in Congress and signed the Declaration of Independence in 1776, and in 1777 he was appointed physician general to the American army, a post which he resigned in 1778, and resumed the private practice of his profession; the emoluments of which he had relinquished, in order to

* His "Address to the inhabitants of the British colonies on Slave-keeping," was published in 1771, to aid a petition to the legislature on that subject. The date of the latter is not recollected.

discharge those public duties to which the state of affairs imperiously called him, and to which his talents were so well adapted.

He was chosen, in the year 1787, a member of the state convention for the adoption of the federal constitution.

In the year 1789 he was elected successor to Dr. Morgan, in the chair of "the Theory and Practice of Physic" in the College of Philadelphia.

In 1791 the College of Philadelphia and the University were united, and Dr. Rush was appointed to teach "the Institutes of Medicine and Clinical Practice." In 1805, Dr. Rush was appointed "Professor of the Institutes and Practice of Physic and of Clinical Medicine," though he had for several years previously taught these branches in consequence of the resignation of Dr. Kuhn: this chair he continued to hold during the remainder of his life.

He officiated for many years as treasurer to the Mint of the United States.

Dr. Rush was thirty years a physician to the Pennsylvania Hospital; during which time he was never absent from the house ten minutes after the appointed hour of prescribing for his patients, unless confined at home by sickness.

His services at the City Hospital, in the yellow fever of 1798, will long be remembered by the citizens of Philadelphia. They were gratuitous; but the Board of Health, in testimony of their importance, presented to him a very elegant piece of plate, with an appropriate inscription.

In the preceding calamity of 1793, he was indefatigable in his professional duties, and laboured very actively to defend his new opinions and modes of practice.

The scientific character which Dr. Rush had acquired, ranked him among the members of almost every medical and literary institution in the United States. He was also complimented with numerous honorary distinctions from foreign nations.

In 1767 he was presented with the freedom of the city of Edinburgh; and in the same year he was elected a member of the Revolution Club in that city.

In the year 1772, he was chosen a corresponding member of the London society for the encouragement of arts and manufactures.

In 1786 he was elected a member of the society of arts and sciences at Milan.

In 1791 he was chosen a member of the German society of "Naturæ Curiosorum."

In 1805 he was addressed by the Prussian government for answers to certain queries respecting the yellow fever; and received, as a compliment for his answers, a coronation medal from the king.

In 1806 he received the thanks of the king of Spain for his answers to queries on the same subject.

In 1807 he received a gold medal from the queen of Etruria. In the same year he was chosen a member of the national institute, class of fine arts, at Paris; and in 1808, a member of the society of the school of medicine at Paris.

In 1811 the emperor of Russia, in compliment to his medical character, presented to him a valuable diamond ring.

The writings of Dr. Rush are very generally known throughout the United States. Those which are preserved in separate volumes are his three essays, called "Sermons to Gentlemen on Temperance and Exercise," published in 1771.

His Medical Inquiries and Observations, the third edition of which was published in 1809, in four volumes.

A volume of Introductory Lectures.

A volume of Essays, moral, literary and philosophical.

A volume, in 1812, on the Diseases of the Mind. Besides which, he has published numerous and valuable essays in the different periodical publications of this country.

During the latter years of his life, his reading was confined exclusively to medical and religious books. He had a great facility in acquiring languages, and understood the Latin, Greek, French, Italian and Spanish. In his native tongue, his writings are always perspicuous, and his style often elegant.

Dr. Rush was for many years engaged very extensively in the practice of his profession, in the city and suburbs of Phila-

delphia; and although he never enjoyed robust health, yet the exposure of his person, in the discharge of professional duties, seldom occasioned him severe indisposition. During the last year or two of his life, a cough which he familiarly called his "tussis senilis" increased very considerably; and having suffered in early life from some pulmonary symptoms, which were thought to wear a consumptive aspect, he never believed he should live to be old.

After visiting his patients as usual, on Wednesday the 14th of April, he was attacked in the evening with a violent chill, which was relieved by some brandy and water. In the night he awoke with a very severe pain in the side, attended with great difficulty of breathing. He sent for a bleeder and ordered him to take eight or ten ounces of blood from his arm. After loosing blood he was relieved and slept. A medical friend was requested to visit him the next morning, and finding him weak and exhausted he administered wine whey, which was evidently very beneficial. His pulse, however, became gradually weaker, and his symptoms soon assumed the prevailing typhus type. Stimulating remedies were administered to as great an extent as the stomach would bear, and external irritation was kept up, but without effect; at about 5 o'clock P. M. on Monday, 19th April, he expired. He was perfectly rational, and expected, with the greatest composure, his approaching dissolution. Some of his last moments were spent in fervent prayer.

With respect to the character of Dr. Rush as a physician and a philosopher, the medical world will not form their opinion from a memorial like the present,—but there are peculiarities of mind in every individual, which are most evident to his intimate associates. The writer of the present article having enjoyed, during some of Dr. Rush's latter years, the honour and advantages of his friendship, thinks himself authorized to speak of him in the following terms.

Dr. Rush, of all men I have ever known, was *first* in conversation. His mind was admirably constructed for this exercise. It had, originally, possessed faculties of no ordinary acuteness;

and these were sharpened by every useful and ornamental study. His memory was a magazine stored with the choicest literary treasures; and so well arranged, that whatever the occasion needed, appeared to present itself first. His judgment was sound, and consequently his remarks always pertinent; but the talent in which he particularly excelled, was *illustration*. No man ever surpassed him in placing in its strongest and most favourable light, any position which it was his design to establish. An apt anecdote, a striking analogy, or even a remote allusion had, in his language, the force of a serious and cogent argument. Every occurrence of his life,—every conversation in which he engaged,—every book, every letter, every news-paper he read,—seemed to furnish him with some new thought of useful import. He never failed to find "sermons in stones, and good in every thing."

His lectures, delivered in public, could not fail, from the circumstances just related, to be instructive, amusing and popular. I do not apply these epithets to such a course of lectures with a view to fix their character, but to notice, briefly, some incidental points, which gave a lustre and brilliancy to important and novel truths. The medical world have not yet learned how to appreciate the professional talents of Dr. Rush; but the day is not remote in futurity, which shall do ample justice to his original mind. At that day, his enemies will have no object in opposing, nor his partisan friends any advantage in supporting his doctrines. At that day, the medical profession will unanimously admit, that Rush is a name worthy to be inscribed on their records, in characters of imperishable splendour!—It is not saying too much, and it is saying what, as an individual, I honestly believe, that to Dr. Rush, more than to any other physician, the medical profession owe their knowledge of the proper method of treating the diseases of America. If the ardour of his mind directed him enthusiastically to extend a principle too far, it must be confessed that this was excusable—was even useful; it evinced an honest confidence that he was right, and that nothing should deter him from pursuing truth, even to the very confines of paradox. I may add, nothing ever did deter him. In spite of all opposition, he maintained his ground; and died, firmly impressed with the truth and importance of the

doctrines he had advanced and taught; and he triumphed in anticipation of their future success. He remembered the fate of Boerhaave: but, though he supposed his personal merits would be forgotten, *his principles* and his practice he expected to outlive him; and long—very long will these be remembered.

The temper of Dr. Rush was ardent and his friendships were firm; he never forgot a benefit, and if he remembered injuries, it was because he had many and harsh ones inflicted upon him. He was ready to believe every thing in a person's favour; and generally over-rated the excellencies, not only of his friends, but of his general associates. In speaking of them he was often supposed to flatter, when he actually expressed the present feelings of his mind. In a sick room he was a comforter, a friend, a father to his patients: they loved, they almost adored him!

His confidence in the powers of medicine was great, and hence he prognosticated the most favourable event in every case of disease; he was called sanguine, but he was sincere in the expression of his opinion, and often relieved the present sorrows of his patient, by his pleasing anticipations of better things.

Perhaps no calamity to which human nature is subjected, can, in all respects, be considered commensurate with a privation of reason. If mind be actually the better part of man, its diseases must be more important, in the same ratio, as its nature is more excellent, than that of the mere anatomical structure formed for its temporary accommodation. This was an idea, which did not fail to excite, in the enterprising genius of Dr. Rush, efforts proportionate to the magnitude of his task, in the development of the nature of human intellect in health and disease. The results of these investigations form, at this time, important additions to the knowledge and usefulness of medical men.

The cell of the maniac they no longer approach with desponding gloom. An asylum, which does honour to the state of Pennsylvania, to the whole western hemisphere, and to the age in which humanity established its foundation, affords, in its annals, numerous trophies to the skilful zeal of this physician of the mind. Wretches, depressed below the level of the brute, have been raised by his exertions, under Providence, to the

grade of human beings, and to the full enjoyment of their pristine faculties. Hundreds, perhaps thousands, will in future swell the list, who will owe to the labours of Rush these exalted blessings. In this view of such a subject it is perhaps, if reverently uttered, not profane to exclaim with Cicero "Homines ad deos nulla re propius accedunt quam salutem hominibus dando."

In the character of Dr. Rush religion and knowledge were combined in a degree seldom equalled: science and humanity were adorned by every accomplishment which can add grace to dignity. He was a patriot—a philosopher—a statesman—a physician;—he was great in every of these capacities—but his highest style was CHRISTIAN!—

Biographical Memoirs of the late ROBERT WILLAN, M. D. F. R. S. *and* S. A. *Author of the Work on Cutaneous Diseases, &c. &c.*

[From the London Monthly Magazine, for January, 1813.

ROBERT WILLAN was born on the twelfth of November, 1757, at the Hill, near Sedbergh, in Yorkshire, where his father resided, in the enjoyment of extensive medical reputation and practice*. He was educated in the principles of the Society of Friends, and received his scholastic tuition, exclusively, at Sedbergh; having obtained his classical knowledge at the grammar-school of that place, under the care of the Rev. Dr. Bateman, and his mathematical acquirements, into the higher parts of which he advanced with great success, by the assistance of the celebrated Mr. Dawson. Being early distinguished by his studious disposition and the rapidity of his attainments, he was a favourite pupil with both his tutors, and was advanced by the former into the classes of his seniors, among whom he maintained his station by the excellence of his lessons and exercises. He became, ultimately, an accomplished classical scholar, and was deemed to excel his master in his

* Dr. Robert Willan, sen. graduated at Edinburgh, in 1745.

critical knowledge of Greek: Mr. Dawson likewise esteemed him one of the most successful students of the mathematics, among the numerous able pupils whom he instructed in that science†. The medical profession had long been determined upon as the object of his future pursuit, and he commenced his studies in that line at Edinburgh, in the autumn of 1777. After the usual residence of three years in that university, he received the degree of Doctor in 1780, when he published his inaugural dissertation, "De Jecinoris Inflammatione." In the autumn of the same year he repaired to the metropolis, with the view of obtaining farther medical information, and attended lectures with great assiduity.

An arrangement had been made some time previously with Dr. Trotter; a relative, and a physician of some eminence at Darlington, in the county of Durham, but advanced in life; in consequence of which he intended to decline practice in that place in favour of his young friend, as soon as he had completed his studies. When in London, Dr. Willan was introduced to Dr. Fothergill, who, from a just estimation of his talents and acquirements, recommended him to try his fortune in the metropolis, and offered him his assistance. Dr. Fothergill, however, died in the month of December, in that year; and in the commencement of the following year, 1781, the death of Dr. Trotter also occurred; upon which Dr. Willan immediately went to Darlington, where he found two opponents already on the spot: one of these, the late Dr. Rotherham, was afterwards, for some years, Dr. Black's assistant at Edinburgh, and ultimately Professor of Natural Philosophy in St. Andrew's; the other, a gentleman whose name we have not learned, continued to reside there while he lived.

Dr. Willan remained at Darlington about a year; during which period he analyzed the sulphureous water at Croft, a village about four miles from that place; and wrote a small treatise respecting its chemical and medicinal qualities, containing also a comparison of its properties with those of the Harrogate waters. This tract was published by Johnson in

† A former Number of the Monthly Mag. is indebted to Dr. Willan for an account of Mr. Dawson.—EDITOR.

1782, with the title of "Observations on the Sulphur Water at Croft, near Darlington:" and a second edition was printed a few years afterwards. In the beginning of 1782, not deeming an establishment at Darlington worth contending for, Dr. Willan determined to return to London. The assistance of Dr. Fothergill was now lost to him; but he experienced much active friendship from Miss Fothergill, the doctor's surviving sister. His advantage, however, was greatly promoted by the establishment of the Public Dispensary, in Carey-street; which was opened in the commencement of 1783, and was chiefly accomplished by the exertions of some of his friends. He was appointed sole physician to it; and, under his humane and active superintendence, together with that of his able and benevolent colleague, Mr. John Pearson, the surgeon to the institution, the new Dispensary speedily flourished, and became one of the most extensive and respectable establishments of its kind in London. He resided, at this time, in Bartlett's Buildings, Holborn, with a family connected with the Society of Friends.

In March 1785, having passed his examinations before the College of Physicians, with great credit, he was admitted a licentiate of that body; on which occasion he addressed some congratulatory Greek verses to the board of Censors. About the year 1786, he engaged in the office of teacher, and delivered lectures on the principles and practice of medicine at the Public Dispensary. But his success, we believe, in this undertaking, was inconsiderable. Such attempts, indeed, have seldom proved eminently advantageous, except in connexion with the large hospitals; the reputation accruing from an attendance on these great schools, being deemed of almost equal importance to the future success of the student, with the knowledge to be acquired there. At a subsequent period, Dr. Willan received, as pupils at the Dispensary, young physicians who had recently graduated, and who were initiated into actual practice, under his superintendence, among the patients of the institution; a mode of tuition from which they derived much practical knowledge, and were gradually habituated to the responsibility of their professional duties. Upwards of forty physicians, almost all of whom have subsequently attained professional reputation, or

now occupy responsible situations, both in this country and abroad, have received the benefit of his instruction.

From the time when Dr. Willan settled in London, he pursued his professional avocations with an indefatigable industry and attention, of which there perhaps are few examples. He never quitted the metropolis for any consideration of health or pleasure during a period of thirty years. For many years he conducted the medical department of two dispensaries, (having subsequently been favoured with an appointment to the Finsbury Dispensary, in addition to that of Carey-street,) during which, his unremitting attention to the progress of the diseases which came under his care, is evinced by the prodigious collection of cases, which he has recorded in MS. mostly in a neat Latin style, in which he wrote with great fluency. From this assiduous and patient observation of the phenomena of disease, he doubtless acquired that acute diagnostic skill, which is the true characteristic of a sound physician; and which all, who have witnessed his practice, allowed him to have possessed in an eminent degree. This discriminative talent, indeed, has been sufficiently manifested in his great work "on Cutaneous Diseases;" but the delicacy of his tact, which enabled him to detect, like an accomplished artist, the minute peculiarities in the appearances of these diseases, which escaped the notice of ordinary observers, was very remarkable. During the whole of his career, he was not less assiduously employed in examining the records of medicine, both ancient and modern, than in the actual observation of diseases; of which the learning and critical acumen displayed in his publications, as well as the mass of manuscript collections which he has left behind, afford abundant proof. His habits of domestic privacy enabled him to dedicate a large portion of time to these researches; and, indeed, to the unabating ardor with which he applied himself to them, must be attributed that premature injury of his health, which shortened the period of his life.

The rise of medical reputation, unassisted by powerful connections, when all unworthy arts of advancement are disdained, must necessarily be very slow. For a considerable time it has no existence, even in the narrow circle of private friends, whose confidence is placed on older heads: and ultimately, it springs

but from the gradual accumulation of individual approbation, as the opportunities of meriting it from time to time occur.

> " Crescit occulto velut arbor ævo
> Fama ——."

Dr. Willan's advance to public reputation, and to the consequent emoluments of the profession, was, however, regularly progressive, though slow; and his publications, especially his Treatise on the Diseases of the Skin, upon which his posthumous reputation will principally rest, finally placed his professional character upon high ground. In the spring of 1791, he had the honour of being chosen a Fellow of the Society of Antiquaries. He had been early attached to antiquarian researches, and in his juvenile days had, with considerable industry and accuracy, collected, from the Odyssey, a history of the manners of the primeval times of Greece. Latterly he communicated some papers to the Society, of which, however, he declined the honour of publication; particularly a collection of provincial words, and an elaborate essay on the practice of " Lustration by Need-fire," (scarcely extinct in some of the northern counties,) which led him into a curious and extensive research, respecting similar practices in ancient times, and the mythological superstitions connected with them. It was not until the month of February 1809, that he was elected a Fellow of the Royal Society.

The increase of his professional avocations, which had compelled him, some time before, to resign his office in the Finsbury Dispensary, led him, in the year 1800, to wish to lessen the fatigue of his duties at the Public Dispensary; and, accordingly, his friend and pupil, Dr. T. A. Murray, was appointed his colleague in that year. This active and intelligent physician, through whose exertions, aided by the Society for bettering the Condition of the Poor, the Fever Institution of the metropolis was established, was unfortunately cut off in February 1802, by the contagion of fever, caught in the infected apartments of the first patients who were admitted into the Institution. Dr. Willan, who had strenuously recommended this establishment, was nominated one of its physicians extraordinary. In December 1803, finding his private practice incompatible with a proper attention to the concerns of the Dispensary, which he had now superintended for

the space of nearly twenty-one years, he resigned his office. The governors of the charity, in testimony of their gratitude for his services, and esteem for his character, nominated him consulting physician, and made him a governor for life, and likewise presented him with a piece of plate, of the value of fifty guineas, inscribed with a testimonial of their attachment and respect*.

For several years previous to his resignation, Dr. Willan's fame and character had been fully established, and the emoluments derived from his practice very ample. He had, during the preceding course of years, resided, successively, in Ely Place, Holborn, and in Red Lion Square, in connection with the family before mentioned; and lastly, on his marriage in the spring of 1801, he settled in Bloomsbury Square. He was now not only generally consulted, especially by persons labouring under cutaneous diseases, but was also referred to on all occasions by his professional brethren, as the ultimate appeal on these subjects: for, however generally skilled in every other department of medical practice, his reputation for peculiar knowledge on this point had certainly excluded him, in some measure, from that universal occupation in his profession, to which he was so well entitled.

From his childhood Dr. Willan had been of a delicate constitution; his complexion in early life being pale and feminine, and his form slender. His extremely regular and temperate mode of life, however, had procured him an uninterrupted share of moderate health, and latterly even a certain degree of corpulency of person, though without the appearance of robust strength.

In the winter of 1810, some of his friends had remarked a slight shrinking of bulk and change in his complexion: but it was not till the following spring, that symptoms of actual disease manifested themselves. Being at this time accidentally

* This inscription was written by the late learned and reverend Dr. Matthew Raine, one of the governors of the Dispensary, and was as follows: "Viro integerrimo, artis scientiæque suæ peritissimo, Roberto Willan, M. D. ob felicissimam operam, in morbis ægenorum civium sanandis, viginti annos amplius gratuito et strenuæ navatum, ægrotantium apud Londinenses pauperum Patroni, amico amici, L. L. D. D. D., A. D. 1804, Preside Comite Sandvicense, collatæ pecuniæ Custode Gulielmo Waddington."

called upon to make some bodily exertion in assisting a patient, his respiration became oppressed, and he expectorated some blood. Soon afterwards he suffered two severe attacks of catarrh in immediate succession, which, as he did not desist from his professional avocations out of doors, did not readily subside, and left behind a considerable difficulty of breathing, which rendered the horizontal posture in bed insupportable; with sleeplessness, total loss of appetite, cough, hoarseness, and a very unequal and irregular state of the pulse; symptoms which seemed to imply an effusion of water into the cavity of the chest, and perhaps into the pericardium. The complexion now became exceedingly sallow, and the tunica conjunctiva of the eyes assumed a yellowish hue. With a view to obtain some respite from professional fatigue, as well as the advantage of a better air, he took a house, in June, 1811, at Craven-hill, about a mile from town, on the Uxbridge road, where he spent his time, with the exception of two or three hours in the middle of the day, when he went to Bloomsbury-square, to receive the patients who came thither to consult him. During the months of July and August, partly in consequence of the mildness of the season, and partly of the employment of some active medicines, and of the repeated applications of blisters, the cough and hoarseness were removed; but the other symptoms underwent little change; and the lower extremities became gradually, but at length severely, anasarcous, from the feet upwards. A sudden unfavourable change of the weather, in September, occasioned a return of the cough and hoarseness, with some expectoration; and the probability of becoming phthisical, under the influence of an English winter, induced him to accede to the strenuous recommendation of some of his friends, and to undertake a voyage to Madeira. He accordingly embarked with his family in the Thames, on the 10th of October; and, after being fifty-three days on shipboard, detained by foul winds in the Downs and at Portsmouth, he arrived at Madeira on the 1st of December. During this interval, a considerable hardness and tumefaction took place in the abdomen, with an effusion of water into that cavity, and he was harassed by a dysenteric attack. By perseverance in an active course of medicine, however, after his arrival at Funchal, all the symptoms

were considerably alleviated; insomuch that, in the month of February, he meditated a return to the south of England in April. But this alleviation was only temporary: his disease was again aggravated; the dropsy, and its concomitant obstruction to the functions, increased; and, with his faculties remaining entire to the last, he expired on the 7th of April, 1812, in the fifty-fifth year of his age.

By the death of Dr. Willan, the profession was deprived of one of its bright ornaments, and of its zealous and able improvers; the sick, of a humane, disinterested, and discerning physician; and the world of an estimable and upright man. By his exterior deportment in public, indeed, he was far from rendering justice to his own character. His early education, his studious mode of life, and retiring disposition, prevented that display of his various and extensive knowledge, in mixed society, which delighted the privacy of a small circle of friends, and which was dispensed with much playfulness and simplicity of manner. In all the relations of domestic life, indeed, he was an object of general esteem and attachment. The gentleness and humanity of his disposition were equally conspicuous, in the exercise of his professional duties; in the patient attention with which he listened to the complaints of the sick, whom, in his fullest occupation, he never dismissed from his presence, dissatified with the brevity of his inquiries; and in the liberality with which he imparted his assistance, yet refused the remuneration to which he was entitled, when the circumstances of the patient appeared to render it oppressive. In his intercourse with his professional brethren, he was liberal and independent, and extremely tender of giving offence. As a practitioner, as we have already observed, he was a close and faithful observer of diseases, and by the peculiar quickness with which he detected their characteristic appearances, however obscured by complication, he had obtained a copious store of sound experience: yet it has been remarked, that he did not always prescribe with that vigour and decision which so much discriminative talent would have authorised.

As a professional writer, Dr. Willan appeared early, in his contributions to the periodical works. On his arrival in London, he became a member of a private medical society, which held

its meetings at a coffee-house, in Cecil-street, and which published two volumes of papers, under the title of "Medical Communications," in 1784 and 1790. In the second of these volumes he published the history of "A remarkable Case of Abstinence," in a hypochondriacal young man, which was interrupted for the space of sixty-one days, and terminated fatally. We believe that this was the only medical society of which he was ever a member.

Several communications from him were also printed in the London Medical Journal, edited between the years 1781 and 1790, by Dr. Simmons. In the fourth volume, page 421, a short letter of his appears, stating the character of a non-descript *Byssus*, found in the sulphureous waters of Aix, and differing from that which he had discovered in the waters of Croft and Dinsdale. In the sixth volume of the same Journal, he relates a fatal case of obstruction in the bowels, from constriction of the colon near the sigmoid flexure, which prevented any evacuation for upwards of thirty days before death; to which he appended some useful reflections on the diagnostic symptoms of these obstructions, as occurring in the large or in the small intestines. In the seventh volume, he describes the cure of a case of chorea, by the cuprum ammoniacum, which, however, he candidly acknowledges, in a subsequent publication, speedily recurred, and was cured by very different means. In the same volume he relates also a singular termination of abdominal dropsy, by a spontaneous discharge of the fluid per vaginam. And in the eighth volume he has given the detail of seven cases of ague, which were speedily cured by the preparation of arsenic, which had recently been recommended by Dr. Fowler. After the publication of the eleventh volume of this Journal, Dr. Simmons commenced a new series, under the title of "Medical Facts and Observations;" in the third volume of which a paper of Dr. Willan's appeared, containing a description of several cases of ischuria renalis in children, which was found to be connected with inflammation throughout the mesentery.

In the year 1796, Dr. Willan commenced a series of monthly reports, after the manner of those which Dr. Fothergill had formerly given to the public, containing a brief account of the state of the weather, and of the prevalent diseases in the me-

tropolis. The practice of a Dispensary, where the diseases of the poor, who are peculiarly exposed to the vicissitudes of the seasons, were observed on a large scale, was particularly favourable for ascertaining the existence of epidemics, and for estimating the state of the public health. By the additional scheme, which Dr. Willan devised, of presenting a monthly catalogue of the diseases which came under his care, the state of the general health was brought most distinctly under view. These reports were published in "*the Monthly Magazine*," which had been recently established, and were continued to the year 1800, when he collected them into a small volume, and published them in 1801, under the title of "Reports on the Diseases in London." This little work is pregnant with important and original medical observations, especially on points of diagnosis, which are the foundation of all rational and successful practice. "*Eum verò recte curaturum, quem prima origo causæ non fefellerit.*" But, from its unassuming pretensions and desultory arrangement, it has not been sufficiently known and valued by the profession: it never reached a second edition.*

We are unacquainted with the circumstances which originally drew the attention of Dr. Willan to the subject of cutaneous diseases. Most probably his own extreme accuracy made him feel early and acutely the vagueness and confusion of language, which universally prevailed in this department of medicine, while his attendance at a public institution brought many of these diseases constantly under his inspection. So early as 1784 and 1785, that accuracy led him to attend to the elementary forms of eruptions, if we may so speak, upon which he saw that a definite nomenclature could alone be founded, and upon which he erected the ingenious system developed in his large work. At that period, in his notes of cases, he has seldom designated eruptions by their ordinary names; but speaks of *papulæ* scorbuticæ, eruptio *papulosa*, &c. In 1786, his notes exhibit still more decisive proofs of the careful attention which he was directing to this subject, in the minute descriptions

* The monthly Magazine was also indebted to Dr. Willan, for many valuable anonymous papers.—EDITOR.

(accompanied by slight sketches with the pen,) of the forms, magnitude, and progress, of eruptions. The zeal with which he was at the same time investigating the original acceptation of the Greek, Roman, and Arabian terms, applied to eruptive diseases, is likewise manifested by his copious collections from authors, and by the occasional alterations of the nomenclature, applied in the cases before he had finally determined on his arrangement. This was probably decided about the year 1789; as in the following year his classification was laid before the Medical Society of London, and honoured by the assignment of the Fothergillian gold medal of that year, to the author.

It is scarcely necessary to state here, that the ground-work of this arrangement is laid in the external characters, or what we have above called the elementary forms, of eruptions, which are distinguished in the outset by precise definitions; such are pimples, scales, rashes, pustules, vesicles, &c. Upon this plan alone can a perspicuous and intelligible classification be formed, as in other branches of natural history.

It was not till the beginning of 1798, that the first part of this work, including the *Papulous* eruptions, was published, in which, as in the subsequent parts, each variety was represented by a coloured engraving. In 1801, the second part, including the *Scaly* diseases of the skin, appeared; in 1805, the third part, comprising only two genera of *Rashes*, viz. measles and scarlet-fever; and, in 1808, the fourth part, comprehending the remainder of the rashes, and the *Bullæ*, or large vesications; the whole containing thirty-three plates, and comprising about half of the classification. Four orders, characterised by the appearance of pustules, vesicles, tubercles, and spots, remain unpublished; and, with the exception of the two first genera of pustular diseases, *Porrigo* and *Impetigo*, which have been long delayed from some impediments on the part of the engraver and publisher, the rest of the MS. is probably not at present in a state to meet the public eye.

In the interim, however, from the temporary interest which the investigation of the vaccine question excited, Dr. Willan was induced so far to anticipate the order of *vesicles*, as to publish, in 1806, a treatise "On Vaccination;" in which he also introduced the subject of chicken-pox (another *vesicular* disease,)

in consequence of the mistakes, which had been committed, in supposing that this was small-pox, when it occurred after vaccination. Two engravings accompanied this treatise, which exhibited the regular form of the vaccine vesicle, the imperfect vesicle, the three varieties of chicken-pox, and the ordinary porrigo favosa of the face, a disease, the origin of which had been falsely attributed to vaccination. Although six years have now elapsed since the publication of this volume, subsequent experience has added no fact of importance to the information which it contains;—another proof of the accuracy of Dr. Willan's observation.

Several years ago, Dr. Willan made a collection of observations, in about two thousand patients, with a view to an investigation of medical physiognomy, or temperaments, chiefly in regard to the diseases to which each variety of temperament is peculiarly predisposed, and to the operation of medicines on them respectively. In the prosecution of this inquiry, he procured several drawings (portraits) illustrative of the characteristic marks of the more striking varieties. He arrived at some interesting inferences respecting both the physical and moral constitutions, connected with these external characters, but he did not deem the matter sufficiently matured to lay before the public.

MEDICAL AND PHILOSOPHICAL INTELLIGENCE.

VACCINATION.

The following important statement, from the annual official reports of the Board of Health, with the account of persons vaccinated by the society for promoting vaccination, must be peculiarly interesting and conclusive, in respect to the benefits of this invaluable discovery. By the reports of the Board of Health, it appears, that there have died of inoculated and natural small-pox in the city of Philadelphia and its neighbourhood—

In 1807,	32 Persons
1808,	145
1809,	101
1810,	140
1811,	117
1812,	NONE.

In 1809,	1102	Persons were successfully vaccinated by the Physicians of the Society for Promoting Vaccination, in the city and neighbourhood of Philadelphia.
1810,	955	
1811,	1277	
1812,	1255	
Total,	4589	

June 26, 1813.

Some Account of the German Universities.

[From the Edinburgh Medical and Surgical Journal, for April, 1812.]

The old, and once celebrated universities of Germany, are tumbling into pieces like the political institutions of the continent of Europe. Within these last two years, accounts have reached us, of the universities of Helmstadt, Altdorf and Rinteln having expired, and many others are fast approaching towards the same fate. Grieswald and Erfurt are nearly deserted, and Halle seems likely to be eclipsed by the splendid endowments of the newly arranged university at Berlin. The king of Prussia, "tired of war's alarms," has devoted his attention to the revival of learning, and the arts and sciences, in his capital. He has given a royal palace, for the purpose of forming spacious class-rooms for lectures, and he has established galleries for works of art, and museums of natural history. Professors and superintendents have been invited from the neighbouring uni-

versities; and medicine, like a wax nose, is to be moulded and fashioned into some new form, to attract the homage of students to the banks of the Spree. Reil has been induced to quit Halle for an appointment and salary adequate to his merit—he presides over the medical department, and was to commence his lectures this present winter. Hufeland, who has been resident at Berlin for several years, is also to deliver lectures on some branch of medicine and physiology. Bernstein is to teach surgery, Hermbstaedt chemistry, Wildenow botany, and Rudolph comparative anatomy and zoology. Professor Weiss, from Leipsic, is appointed superintendent of the mineral cabinet, and to lecture on mineralogy. Gottingen continues to flourish, we are told, under the auspices of King Jerome; and *Halle* is said to have experienced the patronage of his new Majesty and his ministers in a very distinguished manner. This last piece of intelligence interests us as Britons, watching over any attack upon public liberty, and as men of science, who recollect with pleasure their former acquaintance with the members of that once free and celebrated university. Halle has long been distinguished for its eminent professors in the departments of medicine. Stahl, Hoffman, and Gren contributed much to raise its reputation, which has of late years been well supported by the talents of Reil, Loder, Sprengel, Gilbert and others. We hope her star will not be eclipsed, by being forced into another sphere of motion. Whilst Halle remained under the government of Prussia, she enjoyed all the privileges of independence, by being left alone; the exertions of the professors were not damped by ample salaries, and the pursuits and opinions of the students were not checked by arbitrary regulations. In 1802, the total number of students at Halle, was estimated at 634; in 1805, the medical students amounted to 100, the students of theology to 200; but the most numerous class studied law, which comprehended the sons of noblemen and rich merchants, as well as lawyers, who were sent there for general education. There were no medical societies at which the young men met at stated times, consequently not much emulation or spirit of enquiry among them, though every new system of philosophy had its advocates and partizans. The examinations for conferring degrees are not limited to any particular time of the year; each student undergoes his examination for a degree

whenever he demands it; he only submits to one trial, which lasts two or three hours, and is attended by all the medical faculty. Four years is the usual period of study, before any application is made for a degree. The candidate defends a Latin thesis publickly, but this is generally written by one of the professors, and is merely *pro forma*. The session for lectures, both in winter and summer, is like that adopted in our Scottish universities. There was no public hospital attached to the university seven years ago; the infirmary which belonged to the town, for the reception of sick poor, only contained twelve beds. The clinical establishment was founded upon a *nosocomium ambulatorium*, a species of dispensary, where patients were admitted and visited at their own houses. Cases were entrusted to the care of senior students, who drew up the history of the disease and the daily reports, which were submitted to the clinical professor, and he superintended the treatment, and occasionally visited the patient. In this respect, Berlin is better qualified for a school of medicine than Halle, for it has a large hospital, and good clinical wards.

Loder's museum, and his lecture-room, are under the same roof with his dwelling house. He lectures on anatomy, physiology, and surgery; and practises as physician, surgeon and accoucheur. His anatomical preparations are arranged in exquisitely neat order, in several rooms, according to the structure of hard and soft parts of animal bodies. They are very numerous, and many of the injected preparations singularly happy and beautiful. Many rare and important morbid preparations, from which drawings were made for publication, ought ere this time to have been made known to pathologists in this country, if the unfortunate state of public affairs had not stopped our peaceful communication with Hamburgh and Leipsic. There is another extensive collection of anatomical preparations at Halle, which was begun at Berlin by Meckel the first, and has been increased by the labours of his son and grandson. It occupies three large rooms, and is particularly rich in diseased specimens, which, probably, the present Professor Meckel will describe in the journal of morbid anatomy, that he announced two years ago.

Lectures on chemistry and natural philosophy, are given by Gilbert, the learned editor of *Annalen de Physik*. His laboratory is well furnished with chemical apparatus; he has models

and instruments of all kinds, many of them costly, and all of them purchased and collected by his own industry. It is to be hoped, after so many years labour, that it will not be deprived of that reward, which is justly due to his indefatigable exertions in his favourite study of chemistry, or want that best and most flattering encouragement which a numerous class of pupils can give to his zeal and ingenuity.

The public library is upon a large scale; the building is handsome, situated on an eminence somewhat inconveniently at one end of the town, with trees planted around it, and a row of busts of celebrated men in front. It contains a multitude of books, but complaints were made by the curators, of the difficulty in procuring English scientific works, they are so dear, and so rarely exported, and no less difficulty attends the getting books from Italy; but, in spite of these obstacles, the professors are acquainted, through the means of their reviews and periodical works, with every book that is published in the different nations of the world.

The botanical garden is a small one, but it is scientifically laid out by Sprengel, who lectures with great applause on botany. In our frequent visits to the professors, whose politeness and attention could not be exceeded, we frequently heard the praises of our country, not vaguely, but discriminately marked. The discovery of vaccination was more than once mentioned as the most glorious work of any age, and they could not help envying England the honour of having *Jenner* for her son and subject.

Perhaps there have been too many universities in Germany, and it may be serviceable to collect and concentrate the talent of the different states; but we fear the scourge of war will destroy many of the good with the bad; and though the privileged universities may be better supplied, being fewer in number, with the means of affording a scientific education, yet the destruction of so many seminaries, where the lectures, as well as the means of living, were cheap, may cut off many *routineers* from the practice of medicine, whose situation in society is very important, and whose condition has been in Germany of late years so much improved.

February 13th, 1812.

Managers and Physicians of the Pennsylvania Hospital.

May 3, 1813.

At a meeting of the contributors to the Pennsylvania Hospital, held this day, the following contributors were elected officers for the ensuing year:

Managers.

Samuel Coates,	Thomas Stewardson,
Pattison Hartshorne,	Thomas P. Cope,
Lawrence Seckel,	Reeve Lewis,
Zaccheus Collins,	Joseph S. Morris,
Joseph Lownes,	Samuel W. Fisher,
Edward Pennington,	Joseph Watson.

Treasurer.

Joseph S. Lewis.

The following contributors have been elected physicians of the Hospital.

Physicians of the House.

Thomas Parke,
Philip Syng Physick,
Benjamin Smith Barton,
John Syng Dorsey,
Joseph Hartshorne,
John C. Otto.

For the Lying-in Department.

Thomas C. James.

For the Out Patients.

Samuel Calhoun.

At a public commencement held in Philadelphia, the 1st of April, 1813, the following gentlemen received the degree of Doctor in Medicine, in the University of Pennsylvania, having previously passed their respective examinations, and defended the theses attached to their names, viz.

Massachusetts.

Nicholas C. Nancrede, on Inflammation.

John F. Waterhouse, on Leeches.

Joseph G. Nancrede, on Peripneumony.

New York.

Thomas B. Salter, on Suppressing Hemorrhage.

Lewis P. Gebbard, on Hydrophobia.

New Jersey.

Charles E. Pierson, on the Decarbonating Function of the Lungs.

James B. Elmendorf, on Cataract.

James Boyd, on Pulmonary Consumption.

Abraham Vanhoy, on Endemics and Epidemics.

Pennsylvania.

Thomas Billings, on Apoplexy.

George F. Lehman, on Biliary Calculi.

Morris C. Shallcross, on the Effects of Ardent Spirits on the Body and Mind.

Joseph Wilson, on Animal Heat.

John H. Gordon, on Polygala Senega.

Thomas L. Allen, on Hydropic State of Fever.

David Watson, on General Intellectual Derangement.

Mahlon Atkinson, on Cynanche Trachealis.

John N. Thomas, on Sleep.

Benjamin Burrell, on Scarlatina Anginosa.

Benedict D. Potts, on Resuscitation of Persons apparently drowned.

William Price, on Hare Lip.

G. W. Thomas, on Injuries of the Scalp.

James J. Hamm, on Apoplexy.

David J. Davis, on Fracture of the Os Femoris.

Maryland.

Alexander L. Griffith, on Intermittent Fever.

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METEOROLOGICAL OBSERVATIONS.

State of the weather at Philadelphia during the first six months of 1813.

JANUARY.

Thermometer—Lowest, at 8 A. M. 12. 30th day of the month.
Highest, at 3 P. M. 50. 2d
Mean, ... 30.

Winds—westerly, most prevalent.

Several snows, and good sleighing on the 30th.

FEBRUARY.

Thermometer—Lowest, at 8 A. M. 20. 2d day of the month.
Highest, at 3 P. M. 40. 28th.
Mean . . . . 32.

Winds—variable—northerly most common.

Several slight snows.

MARCH.

Thermometer—Lowest, at 8 A. M. 24. 8th day of the month.
Highest, at 3 P. M. 54. 23d.
Mean, ... 40.

Winds—variable, chiefly from the eastward. Two snows in this month. Thunder and lightning on the 1st and 18th days. Not much rain.

APRIL.

Thermometer—Lowest at 8 A. M. 40. 16th day of the month.
Highest, at 3 P. M. 70. 20th and 21st.
Mean, ... 55.

Winds—variable—mostly from the east and north.

Hail on the 11th—little rain—Thunder on the 4th and 14th.

MAY.

Thermometer—Lowest, at 8 A. M. 48. 7th and 8th days of the month.
Highest, at 3 P. M. 75. 24th and 25th.
Mean . . . . 58.

Winds—northerly winds rather prevalent, but very changeable—some heavy rain on the 14th. Thunder and lightning on three different days.

JUNE.

Thermometer—Lowest, at 8 A. M. 58. 1st day of the month.
Highest, at 3 P. M. 86. 18th.
Mean, ... 74.

Winds—westerly winds most prevalent.

Plentiful rains.—On the 16th at night, heavy rain and thunder, with very severe, incessant lightning. The wind blew an hurricane. Many houses, and a great number of trees blown down, within fifteen and twenty miles of the city. The wind first blew from the north east, but changed to the west. The fruits of the earth have been abundant, and the prospect of the grain harvest very favourable.

A malignant typhus fever appeared about the latter part of December, 1812, at Camden, in New Jersey, opposite to Philadelphia. It manifested itself under the deceptive forms of phrenitis—pneumonia—quinsey, and rheumatism. Nine or ten persons in succession, died of this disease, who were treated upon the presumption that it was of an inflammatory type.

A change of treatment, from the debilitating to the stimulating plan, which in many cases was necessarily urged to an unusual degree, and which was founded, principally, upon information derived from the work of Dr. Elisha North, on spotted fever, produced a striking and happy change in the result of a very large proportion of those cases, which subsequently occurred.

Some instances of the disease appeared in this city, about the beginning of February; but it was, for several weeks, principally confined to the Northern Liberties, and chiefly amongst the poor. It, however, gradually extended itself in different directions; being at its height, from the middle to the end of April, and has fallen under the observation of most of our practitioners; although few cases have occurred in the southern parts of the city.

The malignant typhus has also prevailed about Frankford, Abington, and Byberry, in Philadelphia county; in Bucks

county, and in various parts of New Jersey. After its decline in and about Philadelphia, on the approach of warmer weather, an unusual number of mild remittents occurred, which yielded readily to emetics of ipecacuana, cathartics and sudorifics.

Although the disease, as it has manifested itself in and about Philadelphia, has answered generally to the description given of it by Dr. North, yet the instances of pneumonia typhodes appear to have been more frequent with us than seems to have been the case in New England. It is, however, believed, that not more than one fourth of our sick have been affected with pneumonic symptoms. In some of the most malignant cases these symptoms have been entirely absent. These cases were ushered in with chilliness, fever, severe pains of the head and loins; in many, delirium—but in the most violent cases, a very unusual prostration of strength occurred on the first day, and returned at intervals, like the exacerbations of fever, which required the continued application of different powerful stimulants, in order to sustain life. The fifth appeared to be the critical day; but when the disease was combined with affections of the breast in weakly persons, who were subject to cough, it proved very dangerous.

We know of no cases at present in the city or its neighbourhood.

Philadelphia. DIED, on the 23d day of April, 1813, of a lingering illness, Dr. Benjamin Say, in the fifty-eighth year of his age.

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